INTERNET USES AND GRATIFICATIONS:
A STRUCTURAL EQUATION MODEL OF GLOBAL INTERACTIVE
ADVERTISING

By

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A DISSERTATION PRESENTED TO THE GRADUATE SCHOOL
OF THE UNIVERSITY OF FLORIDA IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

UNIVERSITY OF FLORIDA

2002

This dissertation is dedicated to my beloved wife, Minjung Cho.

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December 2002

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Considering several revolutionary changes brought by the Internet, it is important

to examine why and how people from different cultures use the interactivity of the

Internet in terms of their motivations and behaviors. Moreover, it is also important to

understand the role of interactivity concerning the measurement of advertising

effectiveness.

The main objective of this study was to investigate whether perceived

interactivity can be explained by motivations for using the Internet (i.e., antecedents) and

whether this construct also can determine the consequences of interactive advertising

variables: attitude toward the site, attitude toward the brand, and purchase intention. In

addition, this study was also considered an attempt to find differences in these major

elements of interactive advertising among different cultures and different involvement

conditions. For this purpose, the uses and gratifications theory was applied as a main theoretical framework in its application toward global interactive advertising.

This study adopted a between-groups experimental design. In this study, a manipulated factor was involvement conditions (high versus low involvement conditions), and a blocking factor was cultural contexts (people from high versus low context culture). The experiments were conducted in the United States and Korea. As a result, a structural equation model of global interactive advertising was developed by linking a number of motivations for visiting marketing Web sites to interactive advertising variables.

The findings suggested that three Internet usage motivations (information, convenience, and social interaction motivations) have significant direct effects in predicting the duration of time on a Web site, as well as in predicting the perceived interactivity of Internet users. The results also showed that motivations for using the Internet and types of perceived interactivity are considerably different between people from Korea and the United States. However, even though subjects in a high involvement situation spent more time on a Web site than those in a low involvement situation, there was no statistically significant difference in perceived interactivity between the two groups.

This study provides a theoretical model of global interactive advertising by examining the causal relationships between several important variables in the online purchasing process. Subsequently, the results of this study will help predict how Internet usage motivations affect consumers' information processing, as well as their reactions to interactive advertising in different cultures.

CHAPTER 1
INTRODUCTION

There is little doubt that the Internet has created enormous increases in its applications and the number of its users during a considerably short period of time. The Internet is defined as a global network of interconnected packet-switched computer networks (Hoffman and Novak 1996). In other words, the medium is considered to be the communities of people who use and develop these networks, as well as a collection of resources that can be shared at anytime from anywhere (Hoffman, Novak, and Chatterjee 1995). Among various applications of the Internet, the World Wide Web (WWW) and electronic mail (e-mail) have been the most popular applications. While the World Wide Web is characterized by ease of entry, relatively low set-up costs, globalness, and time independence (Berthon, Pitt, and Watson 1996), e-mail is capable of various communication functions from person-to-person communication to group communication in an inexpensive and fast way (Turban et al. 1999). As surfing the World Wide Web and exchanging e-mail get easier and more indispensable in daily life, the Internet has become a viable threat to traditional media, such as television and telephone. According to Nua.com, the global Internet user population is estimated as 605.60 million as of September 2002. Given the current rates of growth, it is expected that people from all demographic and socioeconomic backgrounds will be Internet users, and online households will be similar to the general household by 2004 (Pastore 2000). Moreover, online shopping is expected to reach $1.3 trillion by 2003 (English 2000). That means the Internet also has established itself as an alternative channel alongside traditional

brick-and-mortar shopping venues in the past few years. Consequently, the trend of tremendous Internet usage growth has positioned the medium as a legitimate subject of mass communication and marketing research (Hoffman and Novak 1996).

There are many factors that can explain such an astonishing growth of the Internet. Many studies suggest the following four unique benefits of the Internet: information, interactivity, versatility, and globalness. First, one of the most obvious benefits of the Internet is its ability to access, sort, organize, and display enormous quantities of information (Fortin 1999). For instance, people can find virtually any information on the Web by just typing in a few key words, and most types of information are readily observable, copied, and saved (Alba et al. 1997). Second, the Internet also allows for an interactive communication circumstance (Ghose and Dou 1998). Therefore, people can interact with computers or other people through discussion groups, e-mail, direct ordering, and links to more information (Schumann and Thorson 1999). Third, this medium single-handedly performs several distinguished functions of traditional mass media, such as television, radio, newspaper, magazine, and even telephone (Atkin, Jeffries, and Neuendorf 1998). This convergence makes the old distinctions between print and electronic media less relevant in light of messages that combine text, sound, pictures, animation, video, and virtual reality motion codes (Newhagen and Rafaeli 1996). Finally, the Internet also nullifies many barriers between senders and receivers by eliminating location and time factors across countries. For instance, this medium allows 24-hour asynchronous and synchronous interactions and information retrieval and exchange among individuals and groups from different countries.

The Internet as an Interactive Advertising Medium

The Internet provides a number of benefits to both consumers and advertisers in the context of marketing as well. Regarding this matter, interactive and global aspects should be considered the two main reasons that make this medium a substantial marketing communication vehicle, compared with other traditional media. In other words, the Internet is considered a global marketplace where consumers interact with a wide array of product choices in a nonlinear fashion. In earlier days of the Internet, Deighton (1996) predicted that there would be a shift from mass marketing to interactive marketing. As a matter of fact, interactivity is not really a brand new concept because this concept has been applied in the form of direct mail, catalog retailing, and telemarketing for the past decade (Deighton 1996). However, emergence of the Internet brings about better interactive tools to strengthen relationships with customers no matter where they are. Specifically, the interactivity of the Internet provides advertisers opportunities to identify customers, differentiate them, and customize purchasing and post-purchase service (Pavlou and Stewart 2000). On the other hand, this feature also allows consumers to find out information easily about a number of products and services, pick specific ads in which they are interested, and control the content of the information presented to them (Roehm and Haugtvedt 1999). As popular as this interactive feature appears to be, few previous studies identify clearly the conceptual unit of analysis for interactivity. Hence, this study provides an effective solution to problems with the ambiguous usage of interactivity, especially in the Internet. From this attempt, this study provides a specific unit of analysis for interactivity, a number of dimensions to which interactivity can be applied, and a method for examining interactivity in terms of Internet usage.

The Internet as a Global Advertising Medium

In addition to interactivity, the Internet is also international by definition as its most popular application, the World Wide Web, indicates (Berthon, Pitt, and Watson 1996). The Internet is regarded as a global medium, so the development of this medium has reduced the significance of geographical borders. Therefore, Quelch and Klein (1996) said, "Any company that establishes a site on the Internet automatically becomes a multinational company" (p.62). According to De Mooij (1994), global media provide a number of benefits to advertisers. For instance, the execution of a single worldwide or regional marketing strategy provides enormous savings, while there is another advantage of developing worldwide brand equity through one unified channel. However, the assumption that responses to one single brand or advertising strategy will be similar across countries is considered naïve due to psychological borders as well as geographical borders between cultures (Batra, Aaker, and Myer 1995). For this reason, many cross-cultural studies figure out advertising styles of different countries by analyzing the contents of advertising in traditional media, such as television, newspaper, and magazines, between countries or cultures. In this process, cultural context has been a useful source of insight for a global perspective because this perspective explains some intangible differences between cultures (Yoon and Cropp 1999). General findings of cultural context studies show that media usage and its motives vary widely between cultures. According to Taylor, Miracle, and Wilson (1997), high context cultures, mostly Asian countries, have indirect and ambiguous communication, while low context cultures, mostly Western countries, depend on direct information and data. In the context of advertising, De Mooij (1998) argued that advertising in a high context culture tends to use indirect communication, such as more symbols and less copy. In contrast, advertising

in a low context culture tends to use more copy, facts, argumentation, and data. While many studies are aware of the differences between high and low context cultures in traditional media, very few studies explain such cultural differences in the Internet, which can present a much broader range of benefits as both a global communication and transaction vehicle.

Background of the Study

Considering the several revolutionary changes brought by the Internet, it is natural that the medium has become one of the popular scholarly subjects for many researchers in the field of mass communication (Kaye and Johnson 2001). However, few studies done so far deal with systematical examinations concerning why and how people from different cultures use the interactivity of the Internet in terms of their motivations and behaviors. Moreover, it also seems that there exists only a crude understanding of the role of interactivity concerning the measurement of advertising effectiveness. Therefore, it is important to examine consumers' psychological and behavioral aspects of Internet usage from the perspectives of global interactive advertising. In addition, it is also important to identify similarities and differences in the effectiveness of global interactive advertising between people from different cultures. In this study, South Korea was selected for a comparative analysis with the United States because this country provides the critical environment to do cross-cultural research in global interactive advertising. First, while broadband is available in all advanced Western countries, it has caught on in South Korea twice as fast as in Canada, which has the second highest broadband penetration (Kirk 2001). Broadband provides a favorable environment to use the Internet. South Korea has 14 high-speed Internet subscribers per 100 residents. Second, based on the Business to Consumer e-commerce statistics, South Korea is second only to

the United States in penetration rate of retail sales and Internet shoppers as a percentage of those at the working age (Dryden 2001). Finally, South Korea is a typical oriental culture, rich in tradition and values that are quite different from the West. Because of this, a comparison between countries with such distinct cultural traditions (i.e., the United States and South Korea) provides an even more stringent examination of cross-cultural differences (Taylor, Miracle, and Wilson 1997).

There are two major underlying assumptions of this study. First, global interactive advertising is not limited to any specific tool of Internet advertising, such as banner ads, interstitials, and pop-up windows, because Web sites are equipped with a greater number of options than any other Internet ad format (Rogers and Thorson 2000). In a marketing context, there are two types of Web sites for advertising on the Internet: corporate and marketing Web sites (Deighton 1996). While a corporate Web site is considered a public relations tool to enhance brand or corporate images by providing all kinds of company information to consumers, a marketing Web site is regarded as a kind of direct marketing tool to lead consumers to purchase a product or service from the site by providing more purchase-related information (Fortin 1999; Salam, Rao, and Pegels 1998). Ducoffe (1996) provided an empirical example to demonstrate that consumers considered marketing Web sites as advertising. In addition, Hoffman and Novak (1996) said that a company's Web site is a new form of nonintrusive advertising, in which consumers actively chooses to visit and interact with the company's marketing communication efforts. Assuming that marketing Web sites contain the fullest range of rich interactivity to move consumers closer to a sale, a marketing Web site was examined as a primary form of global interactive advertising in this study.

The other major assumption is that consumers are purposive and active when they use the Internet. In other words, they select the Internet based on their particular needs, such as getting information, being entertained, interacting with others socially, and facilitating convenience (Flanagin and Metzger 2001). Even though different individuals tend to display different types and degrees of activity in the communication process (Swanson 1987), the Internet offers users the means to greatly increase user activity. For instance, the Internet requires frequent audience responses because, unlike traditional mass media, the audience is presented with unlimited options from which they must choose, and their choices are often highly contingent upon a series of earlier responses (Fredin and David 1998). In this process, the uses and gratifications theory is regarded as a natural paradigm for understanding the Internet and its users because of its emphasis on active media users.

Purpose of the Study

The main objective of this study is to examine the causal relationships among motivations for using the Internet and major interactive advertising variables, as well as differences in the causal relationship among different cultures. The major theoretical framework of this study is the uses and gratifications theory because this theory has effectively provided one of the most relevant perspectives to explain psychological and behavioral dimensions involving mediated communication (Lin 1996; Ruggiero 2000). In the context of interactive advertising, this theory also helps explain the motivational basis of Internet users' goals, as well as interactive actions that are executed in pursuit of those goals. For this purpose, this study develops a structural equation model of global interactive advertising that links a number of motivations for visiting marketing Web

sites to interactive advertising variables, such as perceived interactivity, attitude toward the site, attitude toward the brand, and purchase intention. The structural model is based on prior research and expected to integrate several previously unrelated streams of mass communications and advertising research. Once the structural model is developed, this study can explain the effects of motivations and interactivity in establishing consumers' attitude and purchase intention. Based on this model, the following presumed assumptions will be examined: First, people would actively engage in surfing the Internet in order to satisfy their particular needs. Second, different motivations for using the Internet would affect the level of interactivity on the Web. Third, interactivity of the Internet would lead to more positive attitudes toward a Web site and brand, as well as a higher level of purchasing intention. Finally, people would act differently under online circumstance based on their involvement conditions as well as cultural background. In the following section, previous related research is reviewed to lay the basis for developing the hypothesized model and research methodology.

CHAPTER 2
LITERATURE REVIEW

Uses and Gratifications Research

The uses and gratifications theory is considered a psychological communication perspective that focuses on individual use and choice by asserting that different people can use the same mass medium for very different purposes (Severin and Tankard, 1997). While most traditional mass communication theories focus on mass media in terms of media effects, this theory examines the audience as a point of interest (Windahl 1981). This theory has made substantial contributions to the understanding of the mass communication process. Specifically, audiences' psychological processes from exposure to various types of mass media have been examined by many uses and gratifications studies (Swanson 1987). Even though different media satisfy different needs, and within individual media, different content can satisfy different needs, the basic questions of this theory remain the same (Kaye and Johnson 2001; Ruggiero 2000): *Why do people become involved in one particular type of mediated communication or another, and what gratifications do they receive from it?*

Based on these basic questions, the main objective of the uses and gratifications theory is to explain the psychological needs that shape why people use the media and that motivate them to engage in certain media use behaviors for gratifications that fulfill those intrinsic needs (Lin 1999a; Rubin 1994). According to Katz, Blumler, and Gurevitch (1974), there are three basic assumptions in this theory. First, media users are goal-directed in their behavior. Second, they are active media users. Finally, they are aware

of their needs and select the media to gratify their needs. While these assumptions of an active audience in the mass communication process have been criticized on several grounds, a great deal of uses and gratifications studies support the notion that individuals do make conscious choices about media selection and consumption (Rayburn 1996). Especially, the emergence of computer-mediated communication has strengthened the significance of active audience in the uses and gratifications theory (Ruggiero 2000).

Fundamental Components of the Uses and Gratifications Theory

Considering that the media uses and effect process is a complex one, many uses and gratifications studies produced many concepts and attached different meanings to the concepts to explain media consumption of the audience (Rubin 1994). For this reason, Swanson (1977, 1979) even criticized the fact that there is a lack of clarity among major concepts in this theory. Even though several concepts are used by the uses and gratifications studies, the following four concepts are regarded as the central concepts of the uses and gratifications theory: uses, gratifications, motivations, and active audience (Lin 1999a).

Uses

This concept deals with the specific media type or media channel chosen for exposure, as well as the duration of time for the media exposure (Lin 1999a). This concept also indicates the audiences' pattern of media use, attitudes, and expectations (Rubin 1994). The uses of media or channel can be a result of either purposeful or habitual decisions by an audience. Consequently, these decisions are related with the antecedent conditions (i.e., motivation) and the consequent conditions (i.e., gratification) in media use.

Gratifications

This concept concerns the types and degrees of gratifications obtained from media exposure that fulfill the original needs initiating the entire media use process (Lin 1999a). In some uses and gratifications studies, this concept was divided into the gratifications sought and the gratifications obtained. Therefore, the degree to which an individual is satisfied with the gratifications obtained from the media use experience, in turn, positively or negatively affect the gratifications sought in future media use (Lin 1999a). According to Blumler (1979), there are three major social origins of media gratifications: normative influence, socially distributed life changes, and the subjective reaction of the individual to the social situation. In addition, Rayburn (1996) also said that media gratifications have empirical relationships with age, education, gender, income, and family communication patterns.

Motivations

This concept indicates the type of perceived incentives or rewards that can propel an individual to take action and engage in media use (Lin 1999a). Swanson (1987) said that motivations play an important role in interpretively orienting an audience to a media message through using an appropriate interpretive frame. Even though motivations for using a certain type of media are different from person to person, basic media usage motivations have not changed throughout the development of new media technologies (Flanagin and Metzger 2001). For instance, most uses and gratifications studies deal with some or all of the following motivational dimensions: relaxation, companionship, habit, pastime, entertainment, social interaction, information/surveillance, arousal, and escape (Lin 1999a).

Active Audience

The uses and gratifications perspective views audiences as purposive and active, specifying that they select media based on their needs (Flanagin and Metzger 2001). In other words, audiences choose to use media based on their beliefs and feelings about how well doing so will satisfy their needs (Palmgreen 1984). In the early period of the uses and gratifications research, audiences were viewed as universally active in the communication process. However, Levy and Windahl (1984) showed that the range of audience activity varies from high audience activity to low levels of involvement. Since then, the concept of active audience has been regarded as a variable, rather than as an absolute description of the audience (Rubin 1994).

Applications of the Uses and Gratifications Theory

The uses and gratifications theory has been considered an axiomatic theory in that its principles are generally accepted and applicable to various situations involving mediated communications (Lin 1999a). As emerging new media, as well as conventional mass media, provide people with a wider range of media selection and content, this theory is one of the most effective paradigms for identifying media exposure in mass communication studies (LaRose, Mastro, and Eastin 2001). As a result, evolution of uses and gratification research has kept pace with development of communication technologies. This means the audiences' motivations and decisions to use a certain type of mediated communication tool have been investigated by researchers whenever a new technology enters the stage of mass communication (Elliott and Rosenberg 1987). Therefore, the uses and gratification studies have dealt with virtually every kind of mediated communication tool from traditional media, such as newspapers (Elliott and Rosenberg 1987), radio (Mendelsohn 1964), and television (Babrow 1987; Conway and

Rubin 1991; Rubin 1983, 1985), through nontraditional media, including cable television (Heeter and Greenberg 1985), VCR (Cohen, Levy, and Golden 1988; Levy 1987), pager (Leung and Wei 1999), e-mail (Dimmick, Kline, and Stafford 2000), and the World Wide Web (Eighmey 1997; Ferguson and Perse 2000; Korgaonkar and Wolin 1999; Lin 1999b; Papacharissi and Rubin 2000). In spite of the various types of media studied, Palmgreen (1984) classified the uses and gratifications research into the following six main areas: gratifications and media consumption, social and psychological origins of gratifications, gratifications and media effects, gratifications sought and obtained, expectancy-value approaches to uses and gratifications, and audience activity. Even though his classification is about 20 years old, most uses and gratifications studies still belong to one of these research areas (Rayburn 1996). In sum, the uses and gratifications studies have offered insights regarding the reasons why individuals use a certain medium of communication, sociodemographic descriptors of various types of media users, media behavior, and the relations between expected and obtained gratifications resulting from certain media use motivations (Rubin 1994).

Criticisms of the Uses and Gratifications Theory

This theory also has received its share of criticisms for a number of reasons. First, because the individual is usually the unit of analysis, its generalizability to explain or predict beyond the persons studied has been questioned (Severin and Tankard 1997). McQuail (1984) argued that the uses and gratifications theory might neglect the social and cultural environment, in which media usage takes place. Second, there are complexity and uncertainty concerning its major concepts, such as motives, needs, and behaviors (Rubin 1994). Swanson (1977) argued that a lack of precise meanings for the major concepts may create confusion in the uses and gratifications approach. Third,

Swanson (1979) also argued that uses and gratifications research does not seek explicitly to investigate how audiences perceive and interpret the content of media messages. This view questioned the perspective that audiences are universally active when they select media. Therefore, Donohew, Palmgreen, and Rayburn (1987) suggested that audiences' exposure to mass media might not always be highly deliberate or purposeful challenges as expected. Finally, it is difficult to measure internal mental states with the use of self-report data, which is a popular data collection method of this theory (Blumler 1979; Windahl 1981). In spite of this criticism, later research also largely supported the consistency and accuracy of self-report data by validating scales and by using experimental methods (Rubin 1994).

Ritualized and Instrumental Media Usage Orientations

In response to these criticisms, many uses and gratifications researchers have refined its theoretical frameworks by providing additional developments in its concepts or operationalization (Rubin 1994). As an attempt to identify the relationship between motivations and media contents, Rubin (1984) argued that a variety of motivations can be largely divided into two types of media usage orientations: ritualized and instrumental orientations. He also suggested that each media usage orientation is related to different types of media content. This view indicated that all audiences are not equally active at all times even though they are assumed to be active in the communication process (Ruggiero 2000). For instance, ritualized orientation indicates using a medium more habitually to consume time or to escape from current problems (Rubin 1994). In the case of watching television, this orientation is associated with the entertainment types of programs, such as action/adventure, games, music, drama, and general comedy programs. On the other hand, instrumental orientation is a purposive use of media content to seek information

(Conway and Rubin 1991). Therefore, this orientation relates to greater exposure to news and information contents. Such a theoretical development provided a better way to understand audience activity, which is one of the core concepts in the uses and gratification perspective. This means audiences' patterns of media use as well as attitudes and expectations toward media can be more effectively analyzed by these media orientations (Rubin 1994). In sum, the uses and gratifications theory has offered insights regarding various reasons why people use a certain medium of communication, as well as the relations between expected and obtained gratification goals resulting from media usage motivations.

Internet Research in Mass Communication

Since the World Wide Web brought unprecedented developments in our society, several researchers in the field of mass communication have tried to understand the Internet and its explosive growth (McDonald 1997). These numerous and diversified studies dealing with the Internet can be largely divided into three categories according to the major viewpoints of study: studies of the Internet and its effects, studies of Internet adoption, and studies of Internet uses and gratifications.

Internet Effects Research

As an early attempt to compare new media with traditional media, Hoffman and Novak (1996) presented objective characteristics of each mass medium in terms of interactivity, linked sources, communication model, content, media feedback symmetry, and temporal synchronicity. According to their conceptual map of media typology, the Internet occupies largely intermediate positions as combining properties of mass (impersonal) and face-to-face (personal) communication tools. Furthermore, a considerable number of studies compared the effectiveness of the Internet as a marketing

tool to traditional media, especially television. Regardless of predictions that television
would soon be largely replaced by the Internet (Negroponte 1995), some studies showed
a sign of interaction between the two communication tools. For instance, Coffey and
Stipp (1997) said that television plays an important role in leading viewers to a specific
Web site by way of promotions and advertising. For the same reason, Leong, Huang, and
Stanners (1998) described how advertisers consider the effectiveness of the Internet by
comparing it with the eight other main media on a number of key attributes. According
to what they found, the Internet could be a potential threat only to direct mail but
complements the other traditional media. A similar study also was conducted in the field
of political communication. For instance, Johnson, Braima, and Sothirajah (1999)
examined the extent to which heavy users of the Internet differ from heavy users of
traditional media during the 1996 Presidential campaign. As a result, they found that the
Internet has a weak impact on the knowledge of the issue stances, as well as on the
images of the two candidates.

Internet Adoption Research

Past studies of Internet users have mostly examined an adoption process of the
Internet, demographic profile of users, and needs and motivations for using the Internet.
Considering the relatively short history of the Internet in the field of mass
communication, early studies dealing with Internet users adopt the diffusion of
innovation perspective as one of the major theoretical frameworks. The diffusion of
innovations perspective explains how innovations (new ideas, practices, objects, etc.)
become known and are spread throughout a social system (Severin and Tankard 1997).
From this perspective, Internet usage is regarded as an innovative activity. Therefore, the
studies of this perspective mainly examined the demographic profile of Internet users,

their Internet use habits, and their orientation toward adopting new technologies (Atkin, Jeffries, and Neuendorf 1998). In addition, a number of studies also investigated the adoption process of several applications of the Internet. For instance, James, Worting, and Forrest (1995) studied adoption and social impact issues of electronic bulletin board users. As a result, they found that most people post and read messages mainly to give or get information, not for fun and socializing. The results of this study imply that motivations for using the computer-mediated communication tool were still one-dimensional toward the informative purposes at that time. However, a number of later studies showed other motivations, such as entertainment and socialization, from Internet users (Korgaonkar and Wolin 1999; Lin 1999b). With respect to the demographic profiles of Internet users, Lin's study of personal computer adoption dynamics (1998) suggested that age and income are major influential factors on PC adoption. By the same token, the study of Atkin, Jeffries, and Neuendorf (1998) showed that demographics still have more impact on Internet adoption than communication needs served by the new technology in its early stages of diffusion. However, Korgaonkar and Wolin predicted that the role of demographics in determining Internet usage characteristics would be constantly decreased as the Internet becomes more mainstream (1999).

Internet Uses and Gratifications Research

The rapid growth of the Internet has strengthened the potency of the uses and gratifications theory because this medium requires that its users to be more active, compared to other traditional media (Ruggiero 2000). While people are exposed to television or radio in a relatively passive way, Internet users more actively engage in using the medium by searching out information or exchanging messages (Kaye and Johnson 2001). Since one of the major strengths of the Internet is its interactivity, it is

natural that the uses and gratification perspective, which contains audience activity as its core concept, is regarded as one of the most effective theoretical bases to study this medium. Rayburn (1996) also supported the active audience perspective in the context of computer-mediated communication. He suggested that interactive media are "intentionally" consumed, as audiences must make purposive choices about which site to visit. For this reason, many researchers examined psychological and behavioral aspects of Internet users to identify a set of common underlying dimensions for Internet usage motivations (LaRose, Mastro, and Eastin 2001; Lin 1999b).

As an early attempt at Internet uses and gratifications research, Rafaeli (1986) provided that people using university computer bulletin boards are satisfying the following needs: recreation, entertainment, and diversion. With respect to the uses of the World Wide Web, Eighmey and McCord (1998) investigated users of commercial Web sites based on the findings of previous research on radio and television. They found that entertainment value, personal relevance, and information involvement are three major motivational factors for surfing commercial Web sites. Korgaonkar and Wolin (1999) examined Internet users' motivations and concerns by categorizing 41 items into seven factors: social escapism, transactional security and privacy, information, interactive control, socialization, nontransactional privacy, and economic motivation. Additionally, they investigated the relationship between the seven motivational factors and the three usage contexts: time spent on the Web, time spent on the Web for business and personal purposes, and purchase from a Web business. The study of Korgaonkar and Wolin suggested that people use the Internet not only for retrieving information but also for seeking entertainment and escape. Lin (1999b) adopted a different approach from

previous Internet uses and gratifications research because she tried to identify the relationship between Internet usage motivations and the likely online-service adoption. As a result, the surveillance motivation shows the strongest effects for visiting both information and infortainment Web sites, whereas the shopping sites are most strongly affected by the entertainment and surveillance motivations. Papacharissi and Rubin (2000) developed a scale of Internet usage motivations. In this process, they conducted a principal components analysis and derived five primary motives for using the Internet: interpersonal utility, pass time, information seeking, convenience, and entertainment. Ferguson and Perse (2000) examined whether Internet usage motivations (entertainment, pass time, relaxation, social information, and information) would predict certain types of Web sites that subjects had visited in a certain period of time. They showed that the search engine sites are most strongly related with the information motivation, while the interactive sites are related with the entertainment motivation. Recently, Luo (2002) explored effects of informativeness, entertainment, and irritation on various online consumer behaviors, such as attitude toward the site, Internet usage, and satisfaction. He showed that Internet users who perceive the medium as entertaining and informative generally indicate a positive attitude toward the site, while those who perceive the Internet as irritating show a negative attitude toward the site. In sum, the uses and gratifications theory has been quite effective in understanding motivations and needs for using the Internet. Nonetheless, some uncertainties still exist in the relationship between Internet users' motivations for using the medium and interactive aspects when visiting a certain type of Web site.

Interactivity

Since interactivity is one of the most distinguished features of the Internet, numerous studies have tried to understand interactivity from a variety of perspectives. In this chapter, key aspects of interactivity are identified in terms of its definition, dimension, and operationalization.

Conceptual Definitions of Interactivity

The term, *interactivity*, is a complex and multidimensional concept, and there is little agreement on a set of specific conceptual and operational definitions related to it (Lombard and Snyder-Duch 2001). Nonetheless, the essence of interactivity is construed as a series of communication exchanges (Haeckel 1998). Following from this paradigm, Rafaeli and Sudweeks (1997) defined interactivity as the extent to which messages in a sequence relate to each other, and especially the extent to which later messages recount the relatedness of earlier messages. On the other hand, Ha and James (1998) defined interactivity focusing on interpersonal communication as another aspect of the communication exchange paradigm. Thus, they defined interactivity as the extent to which the communicator and the audience respond to, or are willing to facilitate, each other's communication needs. In addition, Morris and Ogan (1996) defined interactivity as a kind of two-way communication system from senders to receivers. According to this paradigm, feedback via any kind of medium can be considered interactivity at the most general level (Pavlou and Stewart 2000). In this sense, most traditional media contain a certain level of interactivity in their applications, such as the letters to the editor section of newspapers and magazines or the request lines of radio and television (Schultz 1999).

Even though the term, *interactivity*, is not really new in the field of mass communication, computer-mediated communication, especially the Internet, has added

new levels of interactivity beyond what is available in traditional mass communication. In the context of computer-mediated communication, Steuer (1992, p.84) defined interactivity as "the extent to which users can participate in modifying the form and content of a mediated environment in real time." Similarly, Jensen (1998) maintained that interactivity is one of the potential abilities of the Internet, which allows its users to exert an influence on the form and content of any message at any time. In addition, Hoffman and Novak (1996) suggested that interactivity of the Internet refers to a nonlinear search and retrieval process that enables essentially unlimited freedom of choice and a great sense of control for the users.

Interactivity also can be defined in the context of marketing or advertising, as the commercial value of this term has been considerably increased since the advent of the Internet. According to Leckenby and Li (2000, interactive advertising is defined as "the paid and unpaid presentation and promotion of products, services, and ideas by an identified sponsor through mediated means involving mutual action between consumers and advertisers" (p.3). Even though this definition of interactive advertising seems to be similar to that of traditional media advertising in most aspects, there is one particular concept that should distinguish interactive advertising from traditional media advertising. In their definition, "mutual action" clearly implies that interactive advertising has shifted a considerable degree of control from advertiser to consumers in the process of advertising. In other words, interactivity allows consumers to actively participate in the persuasion process by controlling the advertising messages, amount of information, and order of presentation at any time according to their needs and preferences.

Dimensions of Interactivity

Interactivity, which can be defined in various ways, also consists of multiple dimensions. Therefore, many researchers have broken down interactivity into several dimensions from a certain perspective. Even though it is somewhat difficult to clearly draw boundaries between various perspectives, it is suggested that there are three major perspectives to describe the dimensions of interactivity: transactional, structural, and functional perspectives.

First, the transactional perspective is a standpoint that classifies interactivity by examining who interacts with whom in a communication process. From this perspective, Hoffman and Novak (1996) divided interactivity into two dimensions: person and machine interactivity. While person interactivity refers to interpersonal communication through a medium, machine interactivity indicates a nonlinear search and retrieval process through the medium. Similarly, Haeckel (1998) stated that interactivity is a person-to-person or person-to-technology exchange designed to effect a change in the knowledge or behavior of at least one person. In addition, Cho and Leckenby (1999) also provided the two dimensions of interactivity: human-human and human-message interactions. According to them, the human-human interaction indicates a two-way flow of communication between senders and receivers. In the context of interactive advertising, this kind of interactivity can be illustrated by providing feedback or personal information to an advertiser or participating in a series of online discussions or forums with other consumers. On the other hand, the human-message interaction refers to the extent to which people can choose and control the messages on a Web site. For instance, this kind of interactivity can be recognized by clicking a series of hyperlinks as a

voluntary exposure to further information provided in the advertisers' Web site or consuming multimedia features on the site.

Second, the structural perspective is a standpoint that classifies interactivity based on its major elements. As an early attempt from this perspective, Steuer (1992) suggested that interactivity consists of three major dimensions. The first dimension is "speed," which refers to the rate at which any content can be manipulated. The second dimension is "range," which refers to the number of possibilities for action at any given time. The last dimension is "mapping," which indicates the way in which human actions in a virtual environment are similar to actions in a real environment. McMillan (2000) also maintained that "control" and "direction" should be considered as important dimensions when an individual perceives interactivity in a particular medium. Specifically, the control dimension means the degree of control over the interaction experience, while the direction dimension refers to the way of communication between senders and receivers. Therefore, it is expected that the perceived interactivity is much higher in the two-way communication (i.e., direction of communication) of the Internet than the one-way communication of traditional mass media. On the other hand, audiences perceive a higher level of interactivity when they exchange information (i.e., degree of control) in the communication process in which they are involved.

Finally, the functional perspective is a standpoint that classifies interactivity based on its actual roles that fulfill different needs. From this perspective, Ha and James (1998) provided the five dimensions of interactivity focusing on communication needs of receivers: playfulness, choice, connectedness, information collection, and reciprocal communication. On the other hand, Ghose and Dou (1998) examined actual interactive

features in several commercial Web sites. In this process, they found more than 20 types of interactive features in those sites and then conducted a factor analysis to classify these interactive features into the following five dimensions: customer support, marketing research, personal-choice helper, entertainment, and advertising/promotion.

In sum, as Internet technology is evolving at a rapid rate, it is predicted that new forms of interactivity are going to emerge continuously in the field of computer-mediated communication. Nonetheless, it is also believed that the above dimensions can cover a considerable range of interactivity in most applications.

Operationalization of Interactivity

Operationalization literally means the operations involved in measuring variables to test any research hypothesis (Babbie 1998). In this section, the operationalization of interactivity will be mainly discussed from previous Internet research in the context of marketing or advertising. When many researchers empirically examined interactivity and its effects, especially under the circumstances of Internet usage, they mostly adopted either content analysis or experiments as their research methodology. In the case of experimental research, most researchers also used an interactivity scale to measure the level of perceived interactivity of Internet users.

First, in content analysis of interactivity, researchers usually examined various Web sites as a unit of analysis to get an idea of how often several types of interactive features were being used (Ha and James 1998), which dimension of interactivity was more prevalent in corporate or marketing Web sites (Ghose and Dou 1998), and how many differences existed in the interactive features of Web sites in terms of product class or culture (Yoon and Cropp 1999). In this process, researchers usually constructed an interactivity index for each site to denote the level of interactive features within that site.

Then this index was used to quantify or compare the level of interactivity a visitor may experience in the site. In addition, this index was also further analyzed to figure out the relationship between interactivity and site preference as well as the cultural differences in interactive features.

Second, in experiments of interactivity, researchers usually emphasized consequences of interactivity, such as attitude toward the site, attitude toward the brand, and purchase intention (Cho and Leckenby 1999; Macias 2001; McMillan 2000). In this process, most studies examined the post-exposure perceived interactivity, along with a series of advertising effectiveness measurements, admitting the difficulty of observing the subjects' actual behavior on a Web site. With respect to the specific methodological procedures, previous experimental studies can be divided according to the two aspects: the matter of either online or offline exposure to stimuli (i.e., Web sites) and the matter of using either actual or fictitious Web sites. In experiments with offline exposure, subjects were mostly exposed to fictitious Web site(s), developed by researchers, as stimuli. On the other hand, the experiments with online exposure either adopted fictitious Web sites with different levels of interactivity or asked subjects to visit real Web sites for a certain purpose. Once subjects were exposed to the stimuli, they were also asked to fill in a questionnaire, either online (i.e., Web questionnaire) or offline (i.e., paper questionnaire), about their perceived interactivity as well as related measurements. In sum, it is shown that higher interactivity yields better advertising effects in spite of differences in experimental procedures.

Finally, in order to measure interactivity in experimental method, a few researchers have developed multi-item scales that examine various aspects of interactivity

on a Web site. Based on the items in this scale, subjects were asked to indicate their level of agreement with perceived interactivity after exposure to a Web site. For instance, Cho and Leckenby (1999) developed a 7-item interactivity scale that measures the subjects' intention of interactivity in the future. While the Cho and Leckenby scale was based on the possibility of future interactivity at the next visit to a certain Web site, McMillan (2000) developed another 7-item interactivity scale that asked about the subjects' interactive experience on a Web site. Therefore, subjects were asked to indicate the degree of past interactivity on a Web site they had visited. In addition to these perceived interactivity scales, some researchers also measured actual interactive behavior on a Web site, such as the number of links visited (Macias 2001) or multimedia features used (Heeter 2000).

Comparisons between Internet and Traditional Media Advertising

Internet advertising can be defined as an advertiser's online marketing activities that allow consumers to view ads, to request and receive specialized product information, to make an instant purchase, and to reveal their own opinions about any product or service through the Internet (Coupey 1999; Ducoffe 1996). From this definition, Internet advertising is construed as a hybrid form of advertising that contains characteristics from several separated advertising activities, such as image advertising, direct response advertising, and even customer service. In addition, this definition also implies that Internet advertising is not limited to any specific tool of advertising on the Internet, such as banner ads, pop-up windows, and interstitials. Instead, an advertiser's corporate or marketing Web site that includes all the above marketing activities is more appropriate to be considered as Internet advertising in the definition.

Even though the ultimate goal of Internet advertising is to sell a product or service just like traditional media advertising, Internet advertising is clearly regarded as a revolutionary type of advertising because the substantive domain of the medium differs from that of traditional media (Fortin 1999). Specifically, Internet advertising is considerably different from traditional advertising in terms of the following five aspects: media efficiency, information richness, personalization, multimedia capability, and outcome measures.

Media Efficiency

Internet advertising can communicate with greater media efficiency than what is possible through traditional media. In traditional media advertising, advertisers try to figure out the likely prospects and aim standardized messages at the target audience using mass media for delivery. In this process, it is very difficult and expensive to enhance the chances that the target audience is likely to be exposed to the media vehicle chosen (Peppers and Rogers 1995). On the other hand, Internet advertising allows advertisers to identify customers, differentiate them, and interact with them, with a relatively low cost. Moreover, Internet advertising can be altered quickly and easily in response to consumer needs and changing market conditions.

Information Richness

Range and depth of information are much greater with Internet advertising than traditional media advertising because one of the major strengths of the Internet is its ability to access, sort, and provide enormous quantities of information (Fortin 1999). For instance, Internet advertising allows consumers easier, greater access to advertisers through a series of links to more in-depth information. On the other hand, advertisers can also collect information from consumers to improve their advertising message and

intended target. In this process, advertisers should differentiate the quality of information from potential competitors due to the excessive information clutter on the Internet.

Personalization

Internet advertising allows consumers to tailor the advertisement to their particular needs and preferences by providing various personalized options. At the same time, Internet advertising also provides advertisers with greater opportunities to profile and understand consumers by its tracking system. As a result, consumers can be exposed to personalized messages from advertisers. According to Nowak et al. (1999), consumers appear to be interested and willing to receive personally relevant advertising messages in spite of their general disdain for explicit sales messages.

Multimedia Capability

Internet advertising can combine the modalities of television, print, and radio into a single presentation of text, graphics, images, audio, and video (Eighmey 1997). Such multimedia capabilities of Internet advertising tend to positively affect consumers' information processing. For instance, Coyle and Thorson (2001) showed that rich multimedia tools in a commercial Web site enhance attention from consumers. However, an irrelevant use of multimedia may also cause consumers' cognitive interference for the information contained in the advertisement.

Outcome Measures

Outcome measures of Internet advertising can be immediately measured and delivered to advertisers in terms of consumers' response to the ad. Even though such traditional outcome measures as awareness, recall, attitude, and purchase intention can be applied to Internet advertising, there are also some unique effectiveness measures in Internet advertising, such as hits, click-through, impressions, page views, and unique

visitors. With instant results from outcome measures, Internet advertising allows advertisers to adjust their marketing strategy within a relatively short period of time (Roehm and Haugtvedt 1999). On the other hand, Internet advertising also has suffered from lack of standardization and confusing terminology for outcome measures (Turban et al. 2000).

Global Interactive Advertising

Global advertising is defined as the use of the standardized advertising appeals, messages, art, copy, photographs, stories, and video segments in multiple country markets (Keegan and Green 2000). As the growth of global media has led to the increasing homogenization of audiences across the countries, global advertising is viewed as an effective marketing tool for consumers around the world (Batra, Aaker, and Myer 1995). Given the Internet's potential as an effective global medium, along with the forecasts of tremendous growth of the global Internet user population, the medium is a very promising tool for global marketers to use as a global advertising medium. Even though globalization, as well as standardization, appears to be more common for global companies' Web sites (Turban et al. 2000), the investigation of cultural difference is indeed important in the context of global interactive advertising. For instance, the language barrier between countries and regions presents an interesting and complicated challenge when developing Web sites in multiple country markets. Therefore, McCarty (1994) maintained that different contextual variations and value orientations should be examined in understanding variability in consumer behavior across cultures.

In this section, various aspects of culture are provided focusing on Hofstede's cultural dimensions and Hall's high and low context to understand different cultural orientations. Then the Internet's potential as a global advertising medium is discussed.

Finally, a brief overview of Internet usage in Korea is provided to analyze the cultural differences between the United States and Korea.

Cultural Dimensions

Culture is a term with multidimensional interpretations (Weber and Hsee 1998). According to Hofstede (1997), the term is defined as "the collective mental programming of the mind which distinguishes the members of one group or category of people from another" (p. 5). In other words, the individual members of a group share certain ideas, values, acts, or emotions with other members of the group (De Mooij 1998). Although numerous definitions of culture were used by different disciplines, McCarty (1994) argued that various definitions of culture share three aspects in common. First, culture is a group's adaptation to the environment. Second, culture is shared by members of a group. Finally, a member of a cultural group is not born with an understanding of the culture, so it is learned through either socialization or acculturation.

In international marketing, culture is considered one of the most influential factors that affect consumers' motives, attitudes toward choices, intentions, and purchases on a global basis (Jarvenpaa and Tractinsky 1999). Supporting this argument, Samiee (2001) even asserted, "the single most important factor that influences international marketing on the Internet is culture" (p. 297). Therefore, most cross-cultural (or comparative) studies look for similarities and differences among nations in terms of a certain set of cultural aspects (Clark 1990). In the context of global interactive advertising, it is also important to understand why and how members of different cultures differ in using the Internet considering the rapid globalization brought by the medium.

In most previous cross-cultural research, cultural differences often follow national boundaries (McDaniels and Gregory 1991), and these differences are analyzed by a

number of cultural dimensions, provided by Hofstede (1997). He suggested that the cultures of different nations can be compared in terms of four underlying dimensions of cultural values: power distance, uncertainty avoidance, individualism/collectivism, and masculinity/femininity. The first dimension, power distance, is defined as "the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally" (Hofstede 1997, p. 28). In large power distance cultures, acceptance and giving of authority is something that comes naturally, while small power distance cultures stress equality in rights and opportunity between superior and subordinate (De Mooij 1998). Second, uncertainty avoidance is the extent to which the members of a society are uncomfortable with unclear, ambiguous, or unstructured situations (Keegan and Green 2000). According to Hofstede (1984), uncertain, ambiguous, risky or undefined situations are seen as threatening and to be avoided at all costs in a high uncertainty avoidance culture, while risk is considered a natural component of life that can often produce opportunity in a low uncertainty avoidance culture. In other words, cultures high in uncertainty avoidance would tend to be less risk-taking because they are motivated by a fear of failure or loss (Bontempo, Bottom, and Weber 1997). Third, individualism/collectivism is a reflection of the degree to which individuals in a society are integrated into groups (Keegan and Green 2000). This dimension is one of the most frequently used subjects in cross-cultural analyses of advertising because this dimension deals with humans' relationships with one another (Cho et al. 1999). The final dimension, masculinity/femininity, is defined as "the dominant values in a masculine society are achievement and success, while the dominant values in a feminine society are caring for others and quality of life" (De Mooij 1998 p.

80). This dimension is not a question of what is considered to be masculine attributes and feminine attributes, rather it relates to the issue of a society's emphasis (McCarty 1994). Particularly, this dimension discriminates between cultures in terms of values related to winning, success, and status, which are much used in advertising appeals (De Mooij 1998).

Cultural Context

Language is a major element of a society's culture, and different languages exhibit contextual variations (Taylor, Miracle, and Chang 1994). Hall (1981) provided the concept of high and low context as a way of understanding different cultural orientations as follows:

> "A high context (HC) communication or message is one in which most of the information is either in the physical context or internalized in the person, while very little is in the coded, explicit, transmitted part of the message. A low context (LC) communication is just the opposite; i.e., the mass of the information is vested in the explicit code" (p.91).

High and low context refers to the amount of information that a person can comfortably manage (Keegan and Green 2000). Thus, a culture where most things are explicitly stated is a low context culture. Hall gave American society as an example of this type of culture. He contrasted American culture with Asian cultures, which are high context, and where a lot of the information is in the context. These cultures tend to be harder to understand and to penetrate than low context cultures. For instance, people from a high context culture often send more information implicitly, have a wider "network," and thus tend to stay well informed on many subjects. In addition, they tend to attach value to group identity, have homogeneous patterns of standards with high requirements and restrictions, and have a strong tendency to build lifetime relationships (De Mooij 1998). On the other hand, people from low context cultures usually verbalize

much more background information, and tend not to be well informed on subjects outside of their own interests. In addition, they tend to attach value to individual orientation, have heterogeneous patterns of standards with low cultural requirements and limits, and are accustomed to short-term relationships (Taylor, Miracle, and Chang 1994).

The distinction between high and low context cultures also has been useful for understanding cultural differences in marketing and advertising practices (Roberts and Ko 2001; Taylor, Miracle, and Wilson 1997). Therefore, a great deal of research on global advertising has applied the concept of high context and low context communication styles in terms of verbal versus nonverbal communication, direct versus indirect advertising, or the use of direct facts versus symbols in advertisements (De Mooij 1998). In this respect, previous research showed that needs for information and types of information desired are considerably different between people from high and low context cultures in the traditional forms of advertising (Cho et al. 1999; De Mooij 1994). Taylor, Miracle, and Chang (1994) said that advertisements in high context cultures are relational, intuitive, and contemplative as opposed to those in low context cultures, which are analytical and action oriented. On the other hand, other cultural dimensions also can be explained by the cultural context. For example, Hofstede (1997) provided a strong correlation between cultural context and the individualism/collectivism dimension. Therefore, he suggested that a low context culture can be generally regarded as an individualistic culture, while a high context culture as a collectivistic culture.

Cultural context is regarded as an efficient tool to explain differences in message content and reactions to an advertisement between two cultures (Batra, Aaker, and Myer 1995). Nonetheless, it still seems that few studies applied such cultural concepts and

their implications under online circumstance. Since the Internet allows consumers to control the amount of information they may choose to receive via their own navigational decisions on a Web site, it is important to examine the cultural differences in motivations for using the Internet, as well as the level of perceived interactivity while surfing on the Web.

The Internet as a Global Interactive Advertising Medium

Global interactive advertising is defined as, "cross-cultural marketing communications that are deliberately planned and executed to actively engage persons in advertising processing through interactivity as a part of overall localized, regionalized or worldwide strategic communication efforts" (Roberts and Ko 2001, p.17). This definition indicates that opportunities for both advertisers and consumers are considerably enhanced by the advent of the Internet, which possesses both strengths in terms of reaching targeted global segments and activating highly two-way interactive aspects. According to Quelch and Klein (1996), there are two major roles of the Internet as a global interactive advertising medium. First, the Internet can increase worldwide transactions by establishing a localized relationship with international consumers. For example, many multinational companies, such as P&G, Sony, Hewlett Packard, and Microsoft, are providing several versions of their website by focusing on non-English speaking consumers with their local languages. In this attempt, most companies use a specific country domain name, such as "co.jp" (Japan) and "co.kr" (Korea) instead of "com." Therefore, a consumer in Korea can enter "www.hp.co.kr" without worrying about using English and purchase the same product as the American consumers do from "www.hp.com." On the other hand, the Internet can also develop a standardized brand image by the identical combination of content, graphics, backgrounds, and multimedia

effects throughout all of their websites in different languages. For instance, the homepages of Coca-Cola have similar graphics and music no matter which country domain name is typed after "www.cocacola." Considering that building a certain consistency of brand imagery worldwide is not an easy task through traditional advertising media (Batra, Aaker, and Myer 1995), the Internet can play an important role in establishing corporate and brand consistency and strong equity, while simultaneously allowing flexibility in being culturally sensitive to persons engaged in advertising processing through interactivity.

Overview of Internet Usage in Korea

While broadband service providers in North America and other countries are struggling to develop high-speed Internet access networks, Korea has experienced explosive growth in the broadband Internet population over the past four years (Kim 2002a). In 2001, the high-speed Internet user rate in Korea was 17.16 percent of the total Internet users, the highest in the world, followed by Canada (8.40 percent), Sweden (4.96 percent), the United States (4.47 percent) and Japan (2.23 percent) (Yang 2002). Even though Korea is still the fourth largest Internet population in the world (Nielsen//NetRatings 2001), Korea is potentially just a couple of years away from being the leading digitalized nation in the world thanks to its high penetration of broadband Internet access and sophisticated telecommunications infrastructure.

In Korea, about 26 million people are estimated to regularly access the Internet, accounting for 58 percent of the entire population. The number of male Internet users is estimated to have reached 14.05 million people, accounting for 55 percent of total users, while female Internet users were 11.6 million (Kim 2002b). Three years ago, the

proportion of male Internet users was 67 percent. That means the gender gap in Internet usage has significantly decreased in Korea.

According to an Internet usage survey by KNP (Korean Netizen Profile) in 2000, the major applications of Internet usage by Koreans were e-mail (73.0%), search engine (68.0%), virtual newsstand (53.3%), entertainment (40.7%), and education/reference (39.8%). The types of Web sites frequently visited by Korean Internet users can be clearly divided according to age group. That means younger age groups prefer to visit the entertainment types of Web sites while older age groups prefer the information types of Web sites. Under this circumstance, the age group of 20-29 years old, which still accounts for the largest portion of Korean Internet users with 38.5%, act as a go-between for younger and older age groups. Therefore, this age group shows many-sided interests in surfing the Internet without leaning toward either information or entertainment Internet usage motivations (DigitalRep 2002). With respect to online shopping, Korea is one of the world's largest online shopping bases, as 31 percent of Internet users in Korea bought products and services online during the first quarter of 2002 (Tham 2002).

Attitude Toward the Ad (A_{ad}) and Web Sites (A_{st})

Since Mitchell and Olson (1981) and Shimp (1981) introduced and suggested the importance of the concept of attitude toward the ad, this construct has been considered a significant antecedent of attitude toward the brand and purchase intention (Miniard, Bhatla, and Rose 1990). One of the effective models for explaining the relationship between attitude toward the ad and advertising outcomes was based on Petty and Cacioppo's (1981) Elaboration Likelihood Model (ELM). On the other hand, as the Internet becomes a substantial advertising medium, measuring attitude toward the site in Internet advertising research is considered parallel to evaluating attitude toward the ad in

traditional mass media advertising research (Chen and Wells 1999). Considering the role of attitude toward the ad in the process of the traditional advertising model, it is believed that the influence of attitude toward the site on attitude toward the brand will be found in the global interactive advertising model as well.

Conceptual Definitions of Attitude Toward the Ad

Attitude toward the ad is defined as "a predisposition to respond in a favorable or unfavorable manner to a particular advertising stimulus during a particular exposure occasion" (Lutz 1985, p. 46). In this definition, a particular exposure to a particular ad is emphasized in the process of attitude toward the ad, and this construct does not mean attitudes toward advertising in general or even attitudes toward the same ad at another point in time. In other words, attitude toward the ad is construed as an affective reaction to the ad generated at the time of exposure and may be expected to have its maximum impact on other outcome variables, such as brand attitude and purchase intention. Even though attitude toward the ad seems to be transitory and exert its influence over a limited period of time, its indirect influence on subsequent advertising outcomes may persist over an extended period of time.

Researchers adopted the concept of attitude in seeking to improve understanding of the effects of persuasive communications (Miniard, Bhatla, and Rose 1990). In applying this concept to the context of advertising, attitude toward the ad was developed because this construct effectively indicates consumers' natural response to an ad compared any other advertising effectiveness measurements. Empirically, this construct seems to be more effective in explaining consumers' reaction toward an ad, as well as their subsequent behavior, than cognitive measurements. In a natural ad exposure situation, consumers may focus more of their attention on advertising stimuli than on

learning about the advertised brand and its attributes. In this process, it would be easier for consumers to generate an attitude toward the ad (i.e., like or dislike the ad) than to remember or evaluate any specific message from the ad as well as any specific advertised brand (Lutz 1985). Therefore, many researchers developed and adopted attitude toward the ad for various purposes in regard to advertising effectiveness.

Attitude Toward the Ad Research

Before the 1980s, most advertising effectiveness studies emphasized the impact of the content of commercial stimuli on several cognitive variables, such as recall, recognition, and brand attribute ratings (MacKenzie and Lutz 1989). However, Mitchell and Olson (1981) and Shimp (1981) introduced the importance of attitude toward the ad by examining consumers' affective reactions to commercials, as opposed to their purely cognitive reactions, especially in relation to beliefs about brand attributes. Specifically, Mitchell and Olson showed that attitude toward the ad accounted for a share of variance in brand attitude beyond that explained by brand beliefs. This finding challenged the theoretical proposition of the Fishbein's attitude theory that beliefs about product attributes are the only mediator of brand attitude. In addition, Shimp (1981) also provided some theoretical arguments and empirical evidences that attitude toward the ad is an important mediator of consumers' choice behavior. He argued that consumers' brand attitudes and purchase intentions are influenced greatly by attitude toward the ad under strategy-limited low involvement conditions, in which consumers do not consider specific benefits of the brand but, rather, feelings toward the ad.

Considering attitude toward the ad as an important mediator in advertising exposure situations, the two studies (Lutz, MacKenzie, and Belch 1983; Lutz 1985) presented a number of key conceptual foundations for future attitude toward the ad

research. First, they introduced the five essential elements of attitude toward the ad models (i.e., attitude toward the ad, brand attitude, advertising cognition, brand cognition, and purchase intention). Second, they proposed that attitudes toward the ad are influenced by five antecedent factors (i.e., ad credibility, ad perceptions, preexisting attitudes toward the advertiser, attitudes toward advertising, and mood). Finally, they also presented four sets of advertising persuasion mechanisms (i.e., classic message-based persuasion, dual mode persuasion, pure affect transfer, and contextual evaluation transfer). In this process, they applied the elaboration likelihood model (ELM) as a theoretical framework for analyzing attitude toward the ad effects and suggested that the central route to persuasion supplements rather than replaces the peripheral route when consumers evaluate advertised brands. On the other hand, Gardner (1985) also examined the conditional factors that influence the relationship between attitude toward the ad and brand attitude. She proposed that subjects in the brand set condition depended on attitude toward the ad as a mediator of brand attitude as much as those in the non-brand set condition.

While the studies of Lutz, MacKenzie, and Belch (1983) and Lutz (1985) conceptualized attitude toward the ad into a systematic framework, the studies of MacKenzie, Lutz, and Belch (1986) and MacKenzie and Lutz (1989) empirically examined the conceptual frameworks of attitude toward the ad. In the study of MacKenzie, Lutz, and Belch (1986), four alternative specifications of consequences of attitude toward the ad were examined by using structural equation modeling. Among the four models (i.e., affect transfer, dual mediation, reciprocal mediation, and independent influences hypotheses), the dual mediation hypothesis showed the best data fit and

predictive ability. That means subjects' evaluation of the ad (i.e., attitude toward the ad) influences brand attitudes directly and also indirectly through an effect on brand cognitive responses across the involvement conditions. On the other hand, MacKenzie and Lutz (1989) identified the structural antecedents of attitude toward the ad based on the two types of involvement (i.e., ad message involvement and ad execution involvement). They showed the dominance of ad-specific antecedent variables in explaining attitude toward the ad, as well as the weak effect of brand cognitions on brand attitude.

In the 1990s, attitude toward the ad research was further developed by the studies of Miniard, Bhatla, and Rose (1990) and Brown and Stayman (1992). For instance, Miniard, Bhatla, and Rose (1990) showed that attitude toward the ad has a significant influence on brand attitude even when peripheral influences are absent from the persuasion process. In addition, they also decomposed attitude toward the ad into two basic dimensions by distinguishing between attitude toward the ad claim and attitude toward non-claim elements. On the other hand, Brown and Stayman (1992) conducted a meta analysis to examine a number of methodological variables that moderate the strengths of relationships found in previous studies of attitude toward the ad. They showed the robustness of attitude toward the ad, as well as the superiority of the dual mediation hypothesis in explaining advertising effects. However, they also suggested a relatively stronger indirect influence of attitude toward the ad and weaker direct influence of attitude toward the ad than was indicated by previous path analysis research.

In addition to the attitude toward the ad research that mainly examined consequences and/or antecedents of attitude toward the ad, a number of researchers also

examined an individual antecedent factor of this construct. First, Muehling (1987)

investigated one antecedent factor, attitude toward advertising in general, by maintaining

that this construct is influenced by a set of beliefs about both institutional and

instrumental aspects. Second, Aaker and Stayman (1990) assessed the underlying

dimensions in ad perceptions by relating these dimensions to measures of commercial

effectiveness. Finally, Shavitt, Lowrey, and Haefner (1998) also examined the general

public's attitudes toward and confidence in advertising by providing differences in these

attitudes as a function of demographic segments. Even though attitude toward the ad was

not a primary focus in these studies, these studies provided useful information for attitude

toward the ad.

Elaboration Likelihood Model

The ELM is a useful explanation of attitude change because this model effectively

explains the role of involvement in the analysis of which persuasion route is likely to be

dominant in a particular communication setting (MacKenzie and Lutz 1989). According

to Petty and Cacioppo (1981), the ELM proposes that persuasion may take a central

and/or peripheral route depending on the level of elaboration during message processing.

In other words, consumers' attitude formation may be influenced by message arguments

(i.e., central route) or by contextual cues (i.e., peripheral route). In the central route,

consumers engage in extensive cognitive elaboration (i.e., issue-relevant thinking) of the

message arguments. That means consumers tend to consciously and diligently consider

the information provided in the ad, in forming attitudes toward the advertised brand. On

the other hand, the peripheral route is taken when extensive cognitive elaboration does

not occur, perhaps because the person lacks the ability or motivation for it. In this

process, attitudes are derived from message cues that are irrelevant to the message

content (i.e., one's liking of the endorser). In other words, attitudes are formed and changed without active thinking about the brand's attributes and its pros and cons in the peripheral route.

The ELM considers consumers' motivation and ability to process information as important determining factors in attitude change. For instance, according to MacKenzie, Lutz, and Belch (1986), consumers are more likely to process centrally when both motivation and ability are high. On the other hand, they tend to process peripherally when either factor is low. Moreover, the role of audience involvement in the ELM is also related to ritualized and instrumental media usage orientations from the uses and gratifications perspective. While audiences with ritualized orientation are more likely to form attitudes peripherally, audiences with instrumental orientation are more likely to engage in extensive cognitive elaboration.

Attitude toward Web Sites (A_{st})

Based on the assumption that a Web site itself is an advertisement, attitude toward the ad can contribute to an understanding of Web site effectiveness, as this construct has been effective in traditional media advertising. Internet advertising is no longer limited to any specific tool of advertising on the Internet, such as banner ads, interstitials, and pop-up windows (Rogers and Thorson 2000). Instead, Web sites can be representative of Internet advertising because a corporate or marketing Web site is equipped with the fullest range of options to move consumers closer to a sale by providing unique interactive features as well as numerous functions of traditional media (Macias 2001). Following from this perspective, measuring Web site effectiveness is one of the important subjects in the field of Internet advertising. For this purpose, many researchers have developed some unique effectiveness measures in interactive advertising, such as

hits, click-through rates, impressions, and page views (Cho and Leckenby 1999). On the other hand, they also showed that some traditional outcome measures, such as awareness, recall, attitude, and purchase intention, also can be applied to website effectiveness.

In this process, it is shown that measuring attitude toward the site is considered parallel to evaluating attitude toward advertising in traditional mass media (Chen and Wells 1999). That means when consumers perceive pleasant or likeable feelings toward a Web site (i.e., positive attitude toward the ad) while surfing through the site, this will enhance chances that they are likely to stay longer within the site, to pay more attention to its content, and to have more positive attitudes toward the advertised brand on the site. With respect to empirical findings of this assumption, Stevenson, Bruner, and Kumar (2000) showed positive correlations between attitude toward the site and a number of advertising-related variables, such as attitude toward brand and purchase intention. Since the Internet contains characteristics of virtually every type of traditional media, it is expected that the previous empirical findings of attitude toward the ad, which show its robustness across various types of advertising medium, also can be applied to explaining Web site effectiveness.

CHAPTER 3
HYPOTHESIZED MODEL

Extending past research of the uses and gratification theory and interactivity on

the Internet, this study proposes a hypothesized theoretical model that examines the

relationship between motivations for using the Internet, interactivity, attitudes, and

purchase intentions (see Figure 3-1). This model consists of the three major parts based

on consumers' actual experience on the Web: general motivations before visiting a Web

site, interactivities during a particular exposure occasion, and attitudes and purchase

intentions after visiting the site.
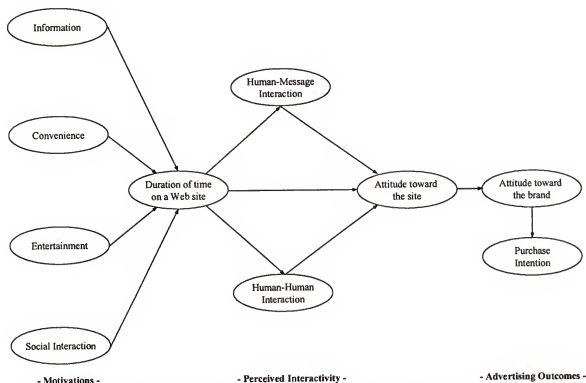
Figure 3-1. Hypothesized structural equation model of interactive advertising

In the first instance, the objective of this study is to find an acceptable confirmatory factor analysis (CFA) measurement model by representing theoretical constructs of Internet usage motivations. Audience activity (i.e., Internet usage) is central to uses and gratifications research, and motivations are key components of audience activity (Papacharissi and Rubin 2000). Based on a series of exploratory factor analyses and the study of Kaye and Johnson (2001), in which a variety of motivational factors were presented from previous Internet uses and gratifications research, this study postulates that there are four major motivations for using the Internet: information, convenience, entertainment, and social interaction. The information motivation is defined as the extent to which users expect resourceful and helpful information from the Internet (Luo 2002). The ease of using the Internet has led Internet users to consider convenience as an important motivation for using the medium (Papacharissi and Rubin 2000). The entertainment motivation refers to the extent to which users seek fun, amusement or excitement while using the medium (Lin 1999b). Finally, the social interaction motivation is the extent to which users expect to express themselves or have something to do with others in virtual communities (Kaye and Johnson 2001). Even though past Internet uses and gratifications research also provided additional motivational factors, such as personal relevance (Eighmey and McCord 1998), socialization (Korgaonkar and Wolin 1999), surveillance (Parker and Plank 2000), and interpersonal utility (Ferguson and Perse 2000), it seems that these motivations share similar meanings and needs with the four motivational factors of the hypothesized model of this study. For instance, the interpersonal utility motivation is similar to the social interaction motivation, and the surveillance motivation implies the information motivation.

Therefore, this study hypothesizes that the four motivations are the major motivational factors for using the Internet.

Second, once a person visits a Web site, s/he is supposed to choose a variety of technical tools that enable visitors to interact with the site (Ghose and Dou 1998). In order to identify underlying constructs of interactivity of the Internet, this study assumes that several forms of interactivity can be divided into the two major types, human-message interaction and human-human interaction, based on the study of Cho and Leckenby (1999). For example, visitors can simply click a number of hyperlinks on the site to obtain more information or multimedia features (i.e., human-message interaction), while they can also provide feedback or personal information to the site (i.e., human-human interaction). At this stage, Berthon, Pitt and Watson (1996) suggested that there is a clear difference between a hit and a visit. Since visitors can just move to other sites from the home page without any interaction with the site (i.e., hit), a visit should imply greater interaction between visitors and the site. As it turned out, this model provides three ways that a visitor receives a certain impression about a Web site: human-message interaction, human-human interaction, and no interaction at all. As a result, this model posits the three direct causal flows from visiting a Web site to the human-message interaction, to the human-human interaction, and to the attitude toward the site. In this process, there are no direct causal paths between the two types of interaction because these two variables are assumed to be positively correlated without direct causal effects between them. In other words, it is difficult to assume that the one type of interaction causes the other type of interaction because of a possible spurious association between the two variables due to common causes, such as motivation or involvement situation.

Finally, the most useful indicator of advertising effectiveness used today is some forms of attitude and choice behavior (Stewart and Ward 1994). Consequently, many researchers have shown the construct, attitude toward the ad, as a mediator of advertising's effects on consumer outcomes, such as brand attitudes and purchase intentions (Lutz, 1985). As can be seen by the hypothesized model, this study assumes that three categories of interactive advertising effectiveness (attitude toward the site, attitude toward the brand, and purchase intention) are affected by either the two types of interactivity (human-message interaction and human-human interaction) or just by visiting the site without any interactivity. As previously mentioned, attitude toward the ad in traditional advertising research is analogized as attitude toward the site in this model. Regarding this matter, Pavlou and Stewart (2000) argued that the usefulness of all the advertising outcome measures is not different for interactive advertising. Following from the study of MacKenzie, Lutz, and Belch (1986), this study postulates that attitude toward the site directly affects attitude toward brand and exerts an indirect influence on purchase intention via attitude toward the brand.

Based on the hypothesized model in Figure 3-1, Table 3-1 presents the major latent variables examined in this study. All constructs in this model can be placed into one of two classes: exogenous or endogenous constructs. While exogenous constructs act only as a predictor or cause for other constructs in the model, endogenous constructs are the dependent or outcome variable in at least one causal relationship (Hair et al. 1998). In this model, Internet usage motivations (i.e., exogenous constructs) are not caused or predicted by any other variables in the model, while the three endogenous constructs,

visits to a Web site, perceived interactivity, and advertising effectiveness, are predicted

by either Internet usage motivations or other endogenous constructs.

Table 3-1. List of the major variables

Constructs	Variables
Internet Usage Motivations (Exogenous Constructs)	- *Information motivation(ξ_1)* - *Convenience motivation (ξ_2)* - *Entertainment motivation (ξ_3)* - *Social Interaction motivation (ξ_4)*
Visits to a marketing Web site (Endogenous Construct)	- *Duration of time on a Web site (η_1)*
Perceived Interactivity (Endogenous Constructs)	- *Human-message interaction (η_2)* - *Human-human interaction (η_3)*
Advertising Effectiveness (Endogenous Constructs)	- *Attitude toward the site (η_4)* - *Attitude toward the brand (η_5)* - *Purchase Intention (η_6)*

As shown in the hypothesized model, the causal relationships among the above

ten variables are as follows. First, the visits to a marketing Web site are affected by the

information, the convenience, the entertainment, and the social interaction motivations.

Second, the visits to a marketing Web site, as well as the motivations for using the

Internet, are causes of both human-message and human-human interactions. Third,

attitude toward the site is affected by both types of interaction and the visits to the site.

Fourth, attitude toward the site is a cause of attitude toward the brand. Finally, attitude

toward the brand is a cause of purchase intention. These causal relationships among the

variables can be represented by the following five linear equations (see Table 3-2) and

full path diagram with LISREL notation (Figure 3-2):

Table 3-2. List of the major linear equations

Linear Equations

Duration of time on a Web site (η_1)
$= \gamma_{11}Information + \gamma_{12}Convenience + \gamma_{13}Entertainment + \gamma_{14}Social\ Interaction + \zeta_1$

Human-Message Interaction (η_2)
$= \beta_{21}Duration\ of\ Time + \zeta_2$

Human-Human Interaction (η_3)
$= \beta_{31}Duration\ of\ Time + \zeta_3$

Attitude toward the site (η_4)
$= \beta_{41}\ Duration\ of\ Time + \beta_{42}H\text{-}M\ Interaction + \beta_{43}H\text{-}H\ Interaction + \zeta_4$

Attitude toward the brand (η_5)
$= \beta_{54}Attitude\ toward\ the\ site + \zeta_5$

Purchase Intention (η_6)
$= \beta_{65}Attitude\ toward\ the\ brand + \zeta_6$
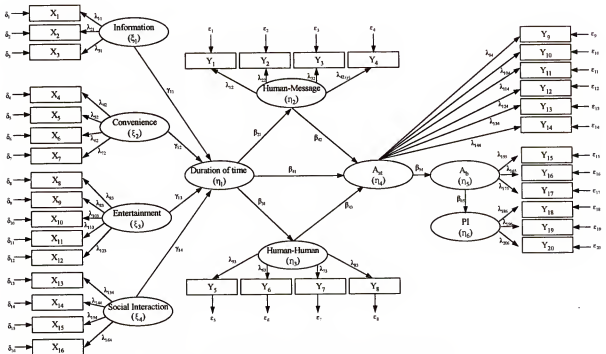
Figure 3-2. Full path diagram portrayal with mathematical notations

CHAPTER 4
RESEARCH HYPOTHESES AND QUESTIONS

The objective of this study is to trace the process through which an exposure to a marketing Web site creates an impact on brand purchase intentions. With the preceding hypothesized model, a number of research hypotheses and questions were developed to empirically examine the causal relationships between motivations for using the Internet and major interactive advertising variables. On the other hand, research hypotheses and questions for group comparison were also developed to examine differences in the duration of time on the site and perceived interactivity between high and low involvement conditions, as well as differences in Internet usage motivations and perceived interactivity between high and low context cultures.

Research Hypotheses

The research hypotheses of this study consist of three major parts. On the basis of prior related research, the first part of the research hypotheses is derived from an overall structural equation model. In this part, the relationships among numerous latent variables are examined in terms of individual paths in this model. The second part of the research hypotheses deals with the presumed effect of the involvement conditions on Internet usage and advertising outcomes. Finally, the third part of the research hypotheses examines the presumed effect of cultural context on perceived interactivity on a marketing Web site.

Relationships Among the Latent Variables

The following four major relationships are hypothesized in this analysis: (1) the effects of Internet usage motivations on exposure to a Web site, (2) the effects of duration of time on the perceived interactivity at the site, (3) the effects of perceived interactivity on advertising effectiveness outcomes, and (4) the causal relationships among the advertising outcomes.

Effects of Internet usage motivations on exposure to a Web site

Hypothesis 1 is designed to examine the causal relationships between the motivations for using the Internet and duration of time on a Web site (i.e., exposure to the site). Prior research in advertising effects suggested that audience's responses to advertising are mediated by factors, such as motivation and ability to process information (Cacioppo and Petty 1985; MacInnis and Jaworski 1989). In addition, Lutz (1985) also mentioned that the consumer's motivation is one of the antecedents of attitude toward the ad. Regarding the effects of motivation, he suggested that ad exposure may be the result of a consumer's motivations for entertainment or information. In the context of computer-mediated communication, motivations for using the Internet can alter or radically affect the duration of time on a Web site. On the basis of these assertions, it is posited that

H1: The motivations for using the Internet will have a significant effect on the duration of time on a Web site.

In hypothesis 1, a path analysis is conducted to examine the causal relationships between Internet usage motivations and duration of time on a site. Considering that there are four motivational latent variables in this model, the direct effects among the four motivations on the duration of time are examined as the exogenous constructs.

Effects of duration of time on perceived interactivity

The second set of hypotheses is designed to examine the effects of duration of time on a site on the degree of perceived interactivity. Duration of time is a critical outcome measure of consumption experiences (Holbrook and Gardner 1993). Hoffman and Novak (1996) argued that duration of time is considered a useful behavioral indicator of goal-directed orientations. Based on the positive subjective experience of flow in computer-mediated communication, they suggested that a relatively greater amount of time spent at the site contributes to a higher degree of involvement or interactions with the site. In other words, the longer a visitor stays at a Web site, the more the visitor uses several interactive functions at the site. Therefore, it is posited that duration of time is a cause of both types of interactivity.

> *H2: The duration of time on a Web site will have a significantly positive effect on the perceived interactivity.*
>
> *H2-1: The duration of time on a Web site will have a significantly positive effect on the perceived human-message interaction.*
>
> *H2-2: The duration of time on a Web site will have a significantly positive effect on the perceived human-human interaction.*

In hypotheses 2-1 and 2-2, a path analysis is conducted to examine a set of two causal relationships, relating the duration of time to the human-message interaction and the human-human interaction. After finalizing a structural equation model based on the path analysis, the standardized coefficient values are examined to identify the relationship among the variables. The structural equation model allows for an understanding of the influence of duration time spent visiting a Web site on the level of perceived interactivity at the site.

Effects of perceived interactivity on advertising outcomes

The third set of hypotheses is designed to examine the effect of perceived interactivity on advertising outcomes. Regarding this matter, Ghose and Dou (1998) argued that degree and nature of interactivity have a significant effect on the quality of Web sites. Taking one step further from the study of Ghose and Dou, Cho and Leckenby (1999) showed that more interactivity is a cause of more intensive information processing, and this may result in more favorable attitudes and higher purchase intention. Accordingly, a considerable number of previous studies suggested that the level of interactivity on a marketing Web site leads to a more positive attitude and, in turn, to product purchase (Coyle and Thorson 2001; Macias 2001; Pavlou and Stewart 2000; Yoo and Stout 2001). Based on prior research, the causal relationships between the perceived human-message interactivity and attitude toward the site (H3-1) and between the perceived human-human interactivity and attitude toward the site (H3-2) will be examined as follows:

> *H3: A higher level of perceived interactivity will have a significantly positive effect on the measures of advertising effectiveness.*
>
> *H3-1: A higher level of human-message interactivity will have a significantly positive effect on attitude toward site.*
>
> *H3-2: A higher level of human-human interactivity will have a significantly positive effect on attitude toward the site.*

In the third set of hypotheses, a path analysis is conducted to estimate the direct effects of human-message interaction and human-human interaction on attitude toward the site. In this process, an effects decomposition table, based on the standardized solution, also provides the direct and indirect causal effects of interactivity on attitude toward the site, attitude toward the brand, and purchase intention.

Effects among the advertising outcomes

Following from the preceding analyses, the fourth set of hypotheses is designed to examine the effect of attitude toward the site on attitude toward the brand and then the effect of attitude toward the brand on purchase intention. Regarding this matter, Lutz and Belch (1983) said that the recipients of an advertising message develop an attitude toward the ad, which in turn exerts an influence on subsequent measures of advertising effectiveness, such as brand attitude, and purchase intentions. In previous causal model analyses, it was shown that attitude toward the ad influences advertising outcomes (Brown and Stayman 1992; Gardner 1985; Miniard, Bhatla, and Rose 1990). Considering that attitude toward the site was proved useful for the analysis of advertising effects in the context of computer-mediated communication (Bruner and Kumar 2000; Chen and Wells 1999), the following hypotheses are provided:

> *H4-1: A higher level of positive attitude toward the site will have a directly positive effect on the attitude toward the brand.*

> *H4-2: A higher level of positive attitude toward the brand will have a directly positive effect on the purchase intention.*

In hypotheses 4-1 and 4-2, a path analysis is conducted to estimate the causal relationships among the three measures of advertising outcomes. The standardized path coefficients for the direct or indirect effects of attitude toward the site on attitude toward the brand and purchase intention show its impact as a mediator of interactive advertising effectiveness.

Differences between the Involvement Conditions

The fifth set of hypotheses is designed to investigate the presumed effect of the involvement conditions on the duration of time, as well as the levels of perceived interactivity on a Web site. Miniard, Bhatla, and Rose (1990) suggested that people in a

high involvement condition engage in extensive cognitive elaboration of the message arguments, while those in a low involvement condition choose a less elaborate way, based on the Elaboration Likelihood Model. In the context of computer-mediated communication, Hoffman and Novak (1996) suggested that people with instrumental orientation (i.e., high involvement) exhibit higher involvement and interactivity on a Web site while people with ritualized orientation (i.e., low involvement) are characterized by frequent site change and less interactivity. Focusing on degree of interactivity on a marketing Web site, previous studies also argued that people in a high involvement condition would engage in a higher level of interactivity on a Web site than those in a low involvement condition (Cho and Leckenby 1999; Yoo and Stout 2001). Therefore, the following hypotheses are provided:

H5-1: People in a high involvement condition will stay longer on a marketing Web site than those in a low involvement condition.

H5-2: People in a high involvement condition will engage in a higher level of perceived human-message interactivity than those in a low involvement condition.

H5-3: People in a high involvement condition will engage in a higher level of perceived human-human interactivity than those in a low involvement condition.

From hypothesis 5-1 through 5-3, ANOVA is used to analyze the effects of the involvement conditions on differences in the three dependent variables (i.e., duration of time on a Web site, perceived human-message interaction, and perceived human-human interaction). In this test, a series of univariate analyses are conducted to examine each dependent variable separately.

Differences between the Cultural Contexts

The final set of hypotheses is designed to examine the presumed effect of cultural contexts on perceived interactivity while on a Web site. The concept of high and low context can refer to the amount of information that a person can comfortably manage (Hall, 1981). Consequently, information search activity can vary from the high context culture where background information is implicit to the low context culture where much of the background information must be made explicit in an interaction with other people (De Mooij 1998). In addition, Taylor, Miracle, and Wilson (1997) also suggested that contextual differences lead to differences in communication practices. Assuming that interactivity on a Web site is a kind of information search process, the two types of interactivity also can be classified as either high or low context interactivity. Therefore, human-human interaction, which indicates online discussions or forums with other Internet users, can be classified as high contextual interactivity, whereas the human-message interaction, which chooses and controls the messages on a Web site, as low contextual interactivity. These assumptions lead to the following hypotheses:

> *H6: People from low and high context cultures will significantly differ on the level of perceived interactivity on a Web site.*
>
> *H6-1: Perceived human-message interaction will be significantly higher for people from a low context culture than for those from a high context culture.*
>
> *H6-2: Perceived human-human interaction will be significantly higher for people from a high context culture than for those from a low context culture.*

In hypotheses 6-1 and 6-2, ANOVA is used to analyze the effects of the cultural contexts on differences in each type of perceived interactivity between the United States and Korea.

Research Questions

The research questions of this study are designed to investigate the individual effect of the four motivations for using the Internet on the duration of time on a Web site and the two types of interactivity on a Web site. This study also posits research questions about the relationship between human-message interactivity and human-human interactivity, as well as the differences in motivations for using the Internet between the two cultures.

Effects of Internet Usage Motivations

Even though previous studies showed that ad exposure is affected by audiences' motivations, there is little empirical evidence regarding the individual effects of each type of Internet usage motivations on site exposure. Therefore, the relative effects, as well as the matter of positive or negative effects, among the four motivations are analyzed in the following research question:

> *RQ1: Are there significant differences among the Internet usage motivations in regard to the average duration of time on a marketing Web site?*

Following from hypothesis 1, a path analysis is conducted to analyze the causal relationship between Internet usage motivations and duration of time on a site. In this process, the direct effects of each motivation for using the Internet on the duration of time are compared. The standardized path coefficients are used to identify the relative impact on the dependent variable (i.e., the duration of time on a site). According to Kline (1998), standardized path coefficients with absolute values less than .10 may indicate a small effect; values around .30, a medium effect; and those greater than .50 a large effect (p.118).

On the other hand, Rogers and Thorson (2000) argued that motivations are critically important to understanding the effectiveness of interactive advertising. Ha and James (1998) also suggested that the interactivity dimensions of a Web site should be examined based on the motivations of its users. Therefore, the following research question is provided:

> *RQ2: Are there significant differences among the Internet usage motivations in regard to the level of perceived interactivity on a marketing Web site?*

In research question 2, another path analysis is used to estimate the effects of the four motivations on both types of interaction. Along with duration of time on a Web site, each motivation is expected to influence the dependent variables (i.e., human-message or human-human interaction variable) as well.

Differences in Internet Usage Motivations between the Two Cultures

The final research question is designed to identify the effects of cultural contexts on motivations for using the Internet. Considering that media usage and its motives vary widely between high and low context cultures (Hong, Muderrisoglu, and Zinkhan 1987), it is desirable to examine the cultural differences in motivations for using the Internet. Especially, the Internet provides consumers an unprecedented control over the amount of information that they may choose to receive (Nowak et al. 1999). Since the concept of cultural context is related to information processing, it is reasonable to assume that Internet usage motivations can be classified as either high contextual or low contextual motivations. For instance, the social interaction motivation may belong to the high contextual motivation because people in a high context culture tend to attach value to group identity. On the other hand, the information motivation may be classified as a low contextual motivation because people in a low context culture prefer a great deal of

detailed information. On the basis of these assumptions, the following research question is posited:

> *RQ3: What are the differences among the Internet usage motivations in terms of high and low context culture?*

In research question 3, ANOVA is used to analyze the effects of the cultural contexts on overall differences in the four motivation variables (i.e., information, convenience, entertainment, and social interaction). In this test, a series of univariate analyses are conducted to examine each dependent variable separately.

CHAPTER 5
RESEARCH METHODS

Overview of the Experiment

This study adopted a between-groups experimental design. In this study, a manipulated factor was involvement conditions (high versus low involvement conditions), and a blocking factor was cultural contexts (people from high versus low context culture). In the simplest form, this study manipulated involvement conditions as either high or low involvement and then observed the responses of subjects on Internet usage motivations, interactivity on a Web site, and a number of advertising effectiveness measures. In this process, subjects were segregated into homogeneous blocks based on their nationality. This resulted in a 2 × 2 blocking design or four experimental groups.

The experiment was conducted in two countries, Korea (i.e., high context culture) and the United States (i.e., low context culture). The total number of subjects was 408 students, 204 Americans and 204 Koreans. Of the data collected, 385 were usable for the analyses of this study. Subjects in each cultural group were randomly assigned to one of the two involvement conditions. Even though it would be better to measure the effectiveness of interactive advertising by looking at actual Web surfing behavior under natural circumstances, subjects were asked to fill out self-reported questionnaires before and after exposure to a Web site due to some difficulties in controlling extraneous variables. The data collection procedure is shown as follows (see Figure 5-1).
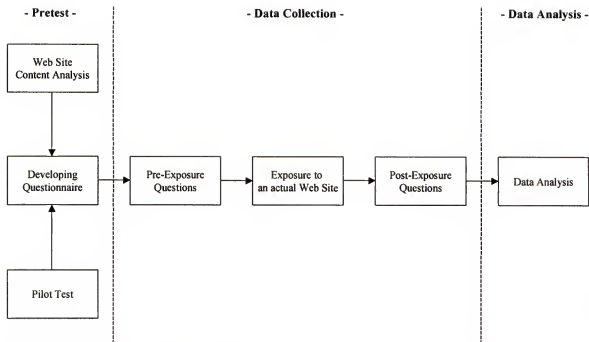
Figure 5-1. Data collection procedure

Pilot Study

Before conducting the actual experiment, a pilot study with 40 subjects was conducted to identify any possible methodological problems, as well as appropriateness of the selected scales, in the United States and Korea. Subjects also were selected by the same standards as in the main experiment, and they consisted of 20 American students and 20 Korean students. Subjects in each country were randomly assigned to either high or low involvement conditions. In addition, this pilot study also included a manipulation check to see whether the manipulation of the involvement condition actually caused the intended effect. Based on the results of the pilot study, a number of methodological aspects, such as questionnaire or manipulation, were modified before the main experiment was conducted.

Four a priori analyses were conducted in this pilot test. First, this pilot test identified underlying constructs of motivations for using the Internet, perceived

interactivity on a Web site, and advertising effectiveness measurements. Initially, the questionnaire included multiple measures of each construct. Then the confirmatory factor analyses featured the distinction between observed variables and the underlying latent variables that the observed variables were presumed to measure by modifying the offending variables. Second, this test examined the relationships among the latent independent and dependent variables. Based on the measurement model from the confirmatory factor analyses, the simultaneous equation model empirically examined a series of causal relationships simultaneously by estimating the strength of each relationship. In this process, the modifications of both measurement and simultaneous equation models were conducted to improve the proposed model and to provide insights into its respecification at the actual experiment. Third, this test also examined whether the manipulations of the involvement condition and cultural context generated the different effect on a number of dependent variables, such as duration of time at the site, perceived interactivity, and motivations for using the Internet. Finally, this test checked the flow of experiment and questionnaire. In this test, subjects were asked to surf through the actual test Web site at their own pace, so their average duration of time on the site was identified before the experiment. Since the results indicated that most subjects spent a considerable amount of time on the site, it was not necessary to require a minimum surfing time at the actual experiment. On the other hand, they were also asked a number of questions before and after the exposure to the site. For executional purposes, the questionnaire originally developed was modified by deleting items that had low factor loadings or loaded significantly more than one factor.

Prior to the pilot test, a number of marketing Web sites with different language options (i.e., Korean and English versions) were content-analyzed to figure out their similarities and differences in terms of information, design, and interactivity features on the sites before developing the questionnaire. Based on this analysis, a Web site that shows identical features throughout several language options was selected for the experiment.

Data Collection

The main experiment was conducted in a computer laboratory equipped with high-speed Internet connection. The data for this study were collected simultaneously in the United States and in Korea from September 23 through October 3, 2002. The experimental settings in the two countries were matched as closely as possible. This experiment adopted the two versions of the questionnaire with the two languages, English and Korean. The questionnaire for Korean subjects was developed through a translation and back-translation process by two bilingual coders in Korea. Following the study of Cho et al. (1999), the use of bilingual coders was expected to enhance the questionnaire validity based on their extensive understanding of the two different cultures. Subjects were asked to participate in a study ostensibly investigating how people use the Internet.

The main experiment consisted of the following three sections. First, subjects were asked to indicate their motivations for using the Internet, their Internet usage patterns (e.g., prior experience of visiting the test Web site, average amount of time spent per day using the Internet, and prior experience of online purchase), and prior brand attitudes before exposure to the stimuli. During the pre-exposure session, subjects were not told about the test Web site and their assignment.

In the second section, subjects were instructed to view an actual Web site,

Hewlett Packard (HP)'s Web site (www.hp.com or www.hp.co.kr), for as long as they

wished under pre-instructed high or low involvement online purchasing conditions. In

this process, subjects under the high involvement situation were asked to surf through a

Web site in accordance with the following instructions:

> Suppose that you are working as student staff in your department, and
> your department chair asked you to find a color inkjet printer from the HP
> (Hewlett-Packard) Web site with a limited budget. Based on your
> suggested model, the department will purchase a total of 30 inkjet printers
> in the future. Your task is to find an ideal color inkjet printer model at the
> HP Web site (www.hp.com) and then provide 1) the model name and 2)
> reasons for your selection in the end. You may use whatever methods you
> think necessary within the HP site to provide appropriate rationales for the
> model, and there is no time limit for this task. As you find the model,
> please remember that you are not allowed to visit any other site, such as
> competitors' sites or shopping agent sites.

> On the other hand, subjects under the low involvement situation were given the

following instruction:

> The purpose of this research is to investigate methods of using visual
> elements on a corporate Web site. Your task is to visit the HP Web site
> (www.hp.com) and simply to examine the visual elements, such as picture,
> color, and design, on the site. As you surf through the site, please
> remember this research is interested in your evaluation of the visual
> elements of the HP site, not in your evaluation of the HP products. You
> may use whatever methods you think necessary at the site to develop your
> impression, and there is no time limit for this process. As you surf
> through the site, please remember you are not allowed to visit any other
> site but the Hewlett-Packard's Web site.

After completing the assigned task on a Web site, subjects were asked to indicate

their experience of interactivity at the site, attitudes toward the site and the brand,

purchase intention, and demographic information. In addition, manipulation check

questions were asked to identify subjects' perceived involvement for a given task. Then

subjects who did not remember or identify a given involvement condition were excluded

from the data analysis. Finally, once subjects completed the questionnaire, they were debriefed about the purpose and the implications of this experiment and given an extra credit for participation.

Sample

The data were obtained from a total of 408 college students with Internet experience in the United States and Korea. In the United States, 204 subjects were recruited from three different undergraduate courses at a large southeastern university. Subjects volunteered to attend one of the twenty 50-minute experimental sessions in return for an extra credit with the permission of instructors for the corresponding courses. Given the extent of missing data and the screening process, a total of eight cases were excluded, so 196 were usable for the data analyses from the U.S. part of the experiment. In Korea, 204 subjects were recruited from five different undergraduate courses at three large universities in Seoul, Korea. They also participated in one of the seventeen 50-minute experiment sessions on a voluntary basis for an extra credit. Applying the same procedure to deal with missing data or offending cases, a total of 15 cases were excluded, and the data from 189 Korean subjects were used in the Korean part of the data analyses. As a result, a total sample size of 385 cases was used in this study.

As already indicated, the subjects were selected on the basis of convenience sampling rather than chosen in an attempt to select subjects representative of the general population. Gliner and Morgan (2000) gave the rationale for using nonprobability samples as follows:

"Some researchers, perhaps especially those who use controlled laboratory and experimental designs, are not primarily interested in making inferences about the population from the descriptive data, as is the case in survey research. These researchers are more interested in whether the experimental treatment has an effect on the dependent variable, and they

assume that if the treatment is powerful, the effect will show up in many kinds of participants" (p. 156).

In addition, Muehling (1987) said that the use of a homogenous population of subjects may be more effective to examine relationship of variables than the use of a more heterogeneous group in experimental research. On the other hand, college students were expected to be appropriate subjects in Internet research because this group accounts for the largest proportion of the Internet population. While 59 percent of Americans are online, the percentage of college students connected to the Web is much higher at 93 percent (Harris Interactive 2002). Furthermore, Davis (1999) argued that college students have acted as opinion leaders about Internet content, and they represent an important group to marketers seeking to develop effective advertising on the Internet. However, the use of a homogeneous student sample might result in different effects from what would be found in the general population. Therefore, this should be noted as a limiting condition when interpreting findings generated by student subjects.

With respect to the cross-cultural analysis of this study, this study divided the sample into the two groups (high versus low context culture) according to their nationality. This blocking design was expected to provide a solution to the problem of generalizability by including more than one block of homogeneous subjects in the experiment (Keppel, 1991). Hence, the 196 American subjects were classified as a "low context" group, while the 189 Korean subjects as a "high context" group according to the classification of Hall (1981). Once the blocks were formed, subjects within a culture block were randomly assigned to the treatment conditions (i.e., either high or low involvement condition). More than 90 subjects were assigned into one of the following four experimental groups (see Table 5-1).

Table 5-1. Sample assignment

	Low Context Culture (United States)	High Context Culture (Korea)	Total
High-Involvement	97	93	190
Low-Involvement	99	96	195
Total	196	189	385

Sample size plays an important role in the estimation and interpretation of any statistical results (Gliner and Morgan 2000). Even though there are no absolute standards in structural equation modeling about the required sample size, Kline (1998) suggested that a model with many parameters, more than 10 parameters, should have a minimum sample size of 100 cases. In addition, the minimum sample size to ensure appropriate use of maximum likelihood estimation is 100 to 150 (Hair et al. 1998). Considering that the total sample size is 385, this study was expected to meet sample size requirements for a structural equation model with maximum likelihood estimation.

Stimulus Material

The subjects in this experiment were asked to visit a real marketing Web site, either the Korean or English version, under a given involvement condition for an online purchase. Mitchell (1986) said that real ads instead of mock ads are more effective in experimental research in order to draw a more natural response from the subjects. Hence, exposure to a real Web site was expected to increase the external validity of the experiment. Given that a real Web site was used as a stimulus material in the experiment, two aspects were considered for the Web site selection: product category and features of a Web site.

The first consideration was the type of product chosen for a Web site. Considering that relevance is a key to generating visits to a Web site (Ducoffe 1996), a

computer company's Web site was selected as the stimus in this experiment. Specifically, subjects under the high involvement situation were asked to find an ideal color inkjet printer on the site, while subjects under the low involvement situation were asked to examine the visual elements, such as picture, color, and design, on the site. There were three reasons for choosing this product category. First, computer equipment is one of the most popular products in online shopping across countries according to Ernst & Young's Annual Global Online Retailing Report (2001). Second, the printer was selected, in part, for its relevance to the subject population. College students usually need a printer to help them produce polished, professional-looking academic work. Therefore, this study assumed that subjects were familiar with printers and had some experience with them. Finally, a printer was considered to be a relatively high involvement product (Tan 1999), so subjects were expected to spend a considerable amount of time interacting with the Web site to find an ideal model.

The second consideration for the Web site selection was the various features provided by the Web site. Based on informal content analysis of several marketing Web sites, the HP site was selected as the test site in the experiment. There were three reasons for selecting the HP site in this study. First, the HP site is considered one of the best Web sites since it employs active marketing approaches and an advanced Web site strategy designed to interact proactively with customers on the Web (Wolf 2002). The site enables consumers to quickly and easily get to the information resources they need with various interactive options. Second, the HP site is one of the few sites that show consistencies among the Web pages with different language options. According to Lynne Baldwin (2002), who is a customer experience manager of HP.com, all country gateways

are able to be updated at the same time for the top layers of the hp.com website. Finally, HP typically updates a major portion of its website only once a year (Baldwin 2002). Since the HP site keeps the frequency of site updates minimal, this prevents a possible confounding effect caused by site changes while conducting an online experiment for a certain period of time.

Probably, the most important aspect of any Web site is the home page that visitors see upon entering because many visitors may only see the front page regardless of how compelling or informative the internal contents may be (Marrelli 1997). It is analogous to the cover being the most important feature of an entire magazine. Considering the importance of home page, it seems that the HP home page effectively uses white space to enhance readability and appearance for making this site attractive. The layout of the HP home page is quite simple and shows a consistency in colors throughout the pages.

There are four main features on the HP home page: product information, company information, customer support, and online order capacity. Specifically, the HP home page is graphics-oriented, featuring the corporate logo and a variety of links to information on a wide variety of consumer and business services and products. Nonetheless, the home page uses images and colors economically to emphasize the contents. Once visitors enter the home page, they may select a country or region based on their nationality. Visitors also may use a search engine to find specific information they need within the site. Considering that Hewlett Packard's major business is computer equipment, this page also provides links to technical support, driver downloads, and online shopping. The home pages of the HP site for the U.S market and the Korean market are shown as follows (see Figure 5-2 and 5-3).
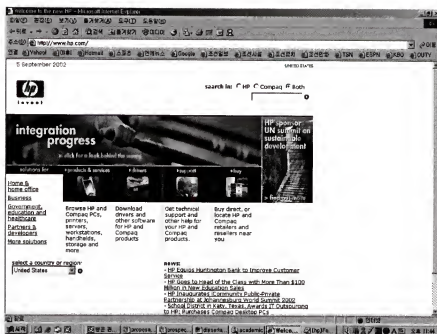
Figure 5-2. Home page of the HP site for the U.S market
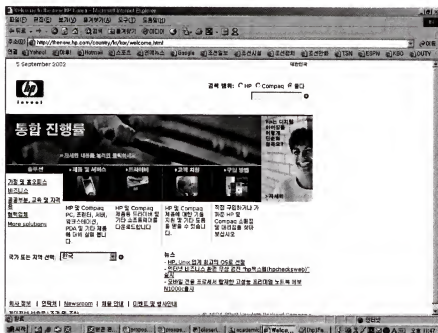
Figure 5-3. Home page of the HP site for the Korean market

Independent and Dependent Variables

In this study, the following variables were analyzed mainly by corresponding scales adopted from previous research on uses and gratifications and advertising effectiveness: motivations for using the Internet, duration of time on a Web site, perceived interactivity on a Web site, attitude toward the site, attitude toward the brand, and purchase intention.

First, subjects were asked to express their levels of agreement with sixteen statements about reasons for using the Internet before exposure to a Web site. Papacharissi and Rubin's (2000) list of Internet motives was mainly used to develop the independent variables in this study. Initially, each statement was derived from the following four motivational dimensions: information, convenience, entertainment, and social interaction. These sixteen statements were supposed to cover most of the motivational dimensions of Internet usage. A seven-point scale was used ranging from 1 (strongly disagree) to 7 (strongly agree) about each statement. Table 5-2 shows each variable, along with its variable name for the statistical analysis.

Second, in order to examine the duration of time on the HP site, subjects were asked to write down the current time, which was shown at the right bottom on the computer screen, when they began to visit a Web site. The current time was asked once more when subjects completed the assignment at the site. Consequently, the difference between the two current times was considered to be the amount of time each subject spent on completing a given assignment at the site.

Table 5-2. Observed variables of Internet usage motivations

Latent Variable	Observed Variable	Variable Name
Information	To learn about useful things	useful
	To learn about unknown things	learn
	It's a good way to do research	research
Convenience	It's convenient to use	convenit
	It's easier to use*	easyuse
	I can get what I want for less effort	lessefft
	I can use it anytime anywhere	useany
Entertainment	It's entertaining	entertng
	I just like to surf the Internet	justlike
	It's enjoyable	enjoyabl
	To pass time	pastime
	It's a habit*	habit
Social Interaction	I wonder what other people said	otherppl
	To express myself freely	freeexps
	To meet people with my interest	meettalk
	To keep up with what's going on*	goingon

* Variables that were deleted to improve the fit of the measurement model.

Third, perceived interactivity was measured with a multi-item scale, ranging from 1 (not at all) to 7 (frequently), based on subjects' actual behavior (McMillan 2000) and future intention (Cho and Leckenby 1999). In this process, subjects were asked to indicate their level of agreement with perceived interactivity in terms of actual interactive experience and future intention of interactivity after the exposure to the HP site. Considering that subjects might act differently under the unnatural conditions created in the computer laboratory, it was necessary to ask future intention of interactivity, which can represent some interactive behavioral measures under more natural circumstance (see Table 5-3 and 5-4 for details).

Table 5-3. Observed variables of perceived interactivity (actual experience)

Latent Variable	Observed Variable	Variable Name
Human-Message Interaction	This site provides a variety of message contents	vmessage
	This site facilitates use of search engine	srchengn
	I fully consumed multimedia features at the site	multimda
	I had a great deal of control at the site	contrlhp
	I got the sense that I was reading a print ad	printad
Human-Human Interaction	This site enabled interpersonal communication	intpersn
	I felt like talking with a sales person at the site	salespsn
	This site was designed to answer my questions	answerpq
	I participated in the customer discussion groups	custmgrp
	This site facilitated contacting the company	contcthp

* Variables that were deleted to improve the fit of the measurement model.

Table 5-4. Observed variables of perceived interactivity (future intention)

Latent Variable	Observed Variable	Variable Name
Human-Message Interaction	I would click into deeper links to see more information	deeplink
	I would stay for a while to look at the details	staylong
	I would use multimedia features in addition to texts	usemulti
	I would use search engine for additional information	usesrch
Human-Human Interaction	I would participate in the customer discussion groups*	particpt
	I would provide my feedback to the site	feedback
	I would contact the company if necessary	phonmail
	I would sign in on the site to get further information	signinhp

* Variables that were deleted to improve the fit of the measurement model.

Fourth, as the concept of attitude toward the ad has been effective in both the academic and practical fields of advertising (MacKenzie and Lutz 1989), it was expected that attitude toward the site would provide valid information about consumers' reactions to a Web site. Hence, attitude toward the site was measured with a six-item, seven-point scale ranging from 1 (strongly disagree) to 7 (strongly agree) according to the study of Chen and Wells (1999). All six items were Internet-specific evaluative statements to assess subjects' general favorability toward a Web site they visited (Table 5-5).

Fifth, attitude toward the brand was measured with a three-item (favorable/unfavorable, good/bad, and pleasant/unpleasant) based on the study of MacKenzie, Lutz, and Belch (1986). In addition, prior brand attitudes also were measured to control this variable in further analysis with a one-item scale (bad/good), ranging from 1 to 9. In order to prevent a possible bias before visiting an actual Web site, attitudes toward other brands also were asked with a one-item scale (bad/good), ranging from 1 to 9 (Table 5-5).

Finally, purchase intention was measured with a three-item scale (likely/unlikely, probable/improbable, and possible/impossible) based on the study of MacKenzie, Lutz, and Belch (1986). Both measures, attitude toward the brand and purchase intention, were represented by multiple seven-point semantic differential scales (Table 5-5).

Table 5-5. Observed variables of advertising effectiveness measurements

Latent Variable	Observed Variable	Variable Name
Attitude toward the site	Surfing this site is a good way for me to spend my time	spndtime
	I would rate this site as one of the best	bestsite
	I am satisfied with the service provided by this website*	satisfy
	I would like to visit this website again in the future	again
	This site builds a relationship with the company	buildhp
	I feel comfortable in surfing this website*	comfort
Attitude toward the brand	Good / Bad	goodbad
	Favorable / Unfavorable	favorabl
	Pleasant / Unpleasant	pleasant
Purchase Intention	Probable / Improbable	probable
	Likely / Unlikely	likely
	Possible / Impossible*	possible

* Variables that were deleted to improve the fit of the measurement model.

Data Analysis

In order to verify the research hypotheses and questions, the obtained data were analyzed in the following four stages. First, a number of descriptive statistics explained variables in terms of their central tendency, variability, or percentages. In this stage, the sample demographics were mainly described, along with prior online shopping experience and prior visiting experience to the HP site.

Second, exploratory factor analysis was used as a preliminary multivariate technique for further statistical analyses in terms of the following three aspects: defining the underlying structure, creating summated scales, and assessing reliability and validity. All the underlying constructs in factor analysis were determined by maximum likelihood estimation and varimax rotation. As its name indicates, maximum likelihood estimation was supposed to maximize the probability that the data were drawn from the population (Kline 1998). On the other hand, this analysis employed varimax rotation in order to achieve simpler and more meaningful factor solutions. This rotation method was considered to provide a clearer separation of the factors than other orthogonal rotation methods (Hair et al. 1998). Regarding the criteria for the number of factors to extract, only the factors having eigenvalues greater than 1 were considered significant. With respect to criteria for the significance of factor loadings, factor loadings of ±.40 were considered practically significant in this analysis even though Hair et al. (1998) suggested that factor loadings of ±.30 were acceptable for sample sizes of 350 or larger.

Third, a structural equation model was formulated with the exogenous variable (motivations for using the Internet) and the endogenous variables (duration of time on a Web site, perceived interactivity, site attitude, brand attitude, and purchase intention). Since one of the major objectives of this study was to develop a global interactive

advertising model, this study merged the two national samples and generated a structural equation model by synthesizing measurement and simultaneous equation models. As input data for estimating the structural equation model, the correlation matrix among all the variables was used in this study. In order to estimate the hypothesized model, a two-step procedure was adopted in this study (Kline 1998).

The first part of the two-step procedure involved estimating a measurement model and a simultaneous equation model. For the measurement model, confirmatory factor analysis estimated the patterns of relationships among a number of observed variables based on the results of exploratory factor analysis. The confirmatory factor analysis validated scales for the measurement of certain constructs, such as Internet usage motivations or perceived interactivity. Once the measurement model was established as providing acceptable estimates, a number of the goodness-of-fit measures assessed the results of the measurement model for the proposed factor solution. In this process, variables that showed low factor loadings, low communalities, and large modification indices on other factors were eliminated or modified, and then the measurement model was reestimated until the model met the requirements for a certain acceptance level. On the other hand, the simultaneous equation model specified the causal relationships in a series of regression-like equations, portrayed graphically in a path diagram. When employed with multiple causal relationships among the latent variables and the measurement model, it is then termed structural equation modeling (Hair et al. 1998). The simultaneous equation model was also reestimated until the model met the requirements for a certain acceptance level from the goodness-of-fit measures. Both the measurement model and the simultaneous equation model were estimated with LISREL

8.50 by the method of maximum likelihood. In this process, all the factor variances were set equal to one. This model provided predictive relationships as well as associative relationships among constructs.

Given an acceptable measurement model and simultaneous equation model, the second part of the two-step procedure involved comparing the fits of the simultaneous equation model to those of the measurement model. The chi-square difference ($\chi^2_{\text{difference}}$) test examined whether estimating the simultaneous equation model resulted in a significant decrement in fit. The goal of this test was to find a parsimonious structural equation model that still explains the data reasonably well based on a number of goodness-of-fit indices. After finalizing a structural equation model, the standardized coefficient values were examined to identify the relationship among the variables.

Finally, a series of univariate analyses of variance (ANOVA) were conducted to measure the differences in various dependent variables (i.e., motivations for using the Internet, duration of time on a Web site, and perceived interactivity) based on the two types of independent variables (i.e., involvement conditions and cultural contexts). As ANOVA has been particularly useful when used in conjunction with experimental designs (Hair et al. 1998), this analysis provided the tools necessary to judge whether an observed difference was due to treatment effects (high versus low involvement and high versus low context culture).

This chapter consists of three sections. First, the descriptive statistics about the study subjects is discussed. Second, the results of structural equation modeling are presented in terms of a series of factor analyses, the measurement model, and the simultaneous equation model. Finally, the results of ANOVA are provided in terms of the two types of independent variables (i.e., involvement conditions and cultural contexts).

Descriptive Statistics

Subject Profile

A total of 408 college students who have used the Internet participated in the experiment (see Table 6-1). After eliminating 23 cases that indicated incomplete answers, the same numbers throughout the questionnaire, or a wrong answer in the screening question, this study examined a total sample size of 385 subjects (94.4%) for the data analysis. Among the 385 subjects, 196 subjects (50.9%) were American students, and 189 subjects (49.1%) were Korean students. The demographic analysis of the sample shows that it consisted of 171 (44.5%) males and 214 (55.6%) females. While the Korean subjects were distributed rather evenly among males (48.1%) and females (51.9%), female subjects accounted for a larger portion in the United States, at 59.2%, than male subjects (40.8%).

Respondents ranged in age from 18 to 29. The mean age was 21.5 years (SD=1.97), and the median age was 21 years. There were 141 subjects under the age of

20 (36.6%), 226 students in the age group 21-25, and 18 students over the age of 30.

Even though both countries indicated a similar range in age, the Korean subjects showed

higher mean (22.1 years) and median (22 years) in age than those of the American

subjects (20.8 years and 20 years).

Following from the age group, 17 subjects (4.4%) were first-year college students,

82 subjects (21.3%) were second-year college students, 168 subjects (43.6%) were third-

year college students, 102 subjects (26.5%) were fourth year college students, and 16

subjects (4.2%) were graduate students. In both countries, third year college students

accounted for the largest proportion. There was no first year college student among the

American subjects. This is due to the fact that freshmen do not usually enroll in

intermediate level courses their first year.

Table 6-1. Demographic profile of the respondents

	Total	United States	Korea
Number of subjects	385	196	189
Male	171 (44.4%)	80 (40.8%)	91 (48.1%)
Female	214 (55.6%)	116 (59.2%)	98 (51.9%)
Age			
Range	18-29	18-29	18-27
Mean	21.5 (SD=1.97)	20.8 (SD=1.88)	22.1 (SD=1.85)
Median	21	20	22
Education			
1st year	17 (4.4%)	0	17 (9.0%)
2nd year	82 (21.3%)	49 (25.0%)	33 (17.5%)
3rd year	168 (43.6%)	80 (40.8%)	88(46.6%)
4th year	102 (26.5%)	57 (29.1%)	45 (23.8%)
Graduate Students	16 (4.2%)	10 (5.1%)	6 (3.2%)

Internet Usage Pattern

Subjects were asked to indicate three aspects of prior Internet usage experience in this experiment. First, the amount of Internet use was examined in terms of the average amount of time per day spent on the Internet. Second, prior online shopping experience was examined in terms of the number of online purchase for the past 12 months. Finally, subjects were also asked to indicate prior visiting experience to the test Web site (www.hp.com or www.hp.co.kr), as well as prior brand attitude toward Hewlett Packard, before visiting the site in the experiment.

Amount of Internet usage

The average amount of Internet use was estimated by two separated amounts of time for using the medium, on a usual weekday and on a weekend day. This question was based on the assumption that the amount of time could be different between weekdays and weekends. Considering the number of weekdays and weekend days in a week, each amount of time was weighted by 5/7 and 2/7 respectively. Then the sum of the two weighted amounts of time was regarded as the average amount of time per day on the Internet. It was shown that subjects spend an average of 151 minutes per an average day on the Internet since the average amounts of time spent on the Internet were about 146 minutes per a weekday and 163 minutes per a weekend day.

The between-groups t-test for the Internet usage amount indicated that Korean students spend significantly more time on the Internet than American student do at the .01 level (see Table 6-2). For instance, Korean students use the Internet for about three hours per day, while American students use the Internet for about two hours per day. It is interesting to note that Korean students spend relatively more time online on an average weekend day (223 minutes) than on a weekday (164 minutes), while American students

spend more time on an average weekday (128 minutes) than on a weekend day (106 minutes).

Table 6-2. Average amount of time for using the Internet by nationality

	Total	American (N=196)	Korean (N=189)	t	Sig.
	Mean (SD)	Mean (SD)	Mean (SD)		
Minutes per a day	151 (104.18)	122 (90.75)	181 (108.83)	5.77	.00
Minutes per a weekday	146 (104.17)	128 (104.56)	164 (100.84)	3.43	.00
Minutes per a weekend day	163 (137.90)	106 (94.68)	223 (150.12)	9.11	.00

Prior online shopping experience

With respect to prior online shopping experience, respondents were asked to indicate whether they had ever purchased merchandise or services from the Internet during the past 12 months (see Table 6-3). Among the total subjects, 284 students (73.8%) had made at least one product or service purchase from the Internet, while 101 students (26.2%) had not shopped online. The proportion of online shoppers in this study is considerably increased from that of the Donthu and Garcia study (15.4%) in 1999. As it turned out, the proportion is consistent with that of the Ernst & Young's annual Global Online Retailing report (2001), in which 74% of Internet users have purchased at least one item online. In addition, the average number of products or services purchased by the subjects who had shopped online was 6.2 items.

With respect to the comparison between the United States and Korea, the chi-squared test indicated that the American students and the Korean students do not statistically differ in their online shopping behavior at the .05 level (see Table 6-3 and 6-

4). For instance, online shoppers accounted for more than 70 percent of the total subjects in both countries even though the proportion of online shopper is higher for the American subjects (76.5%) than for the Korean subjects (70.9%). In addition, the between-groups t-test for the number of items purchased from the Internet also showed that there is no significant difference between online shoppers of the two countries at the .05 level even though the Korean online shoppers seemed to purchase more items than the American subjects did.

Table 6-3. Online shopping for past 12 months by nationality

	Total (%)	American (%)	Korean (%)	χ^2	Sig.
Online Shopper	284	150	134	1.58	.21
	(73.8)	(76.5)	(70.9)		
Non-online shopper	101	46	55		
	(26.2)	(23.5)	(29.1)		
Total	385	196	189		
	(100)	(100)	(100)		

Table 6-4. Number of items from online purchase by nationality

	Total (N=284)	American (N=150)	Korean (N=134)	t	Sig.
	Mean (SD)	Mean (SD)	Mean (SD)		
Number of items	6.20	5.57	6.91	1.36	.18
	(8.11)	(6.00)	(9.93)		

Prior visiting experience to the HP Web site

Before visiting the HP site in the experiment, respondents were also asked to indicate whether they had ever visited the site during the past 12 months (see Table 6-5). About a quarter of the total subjects had visited the HP site during the past 12 months,

while 289 subjects (75.1%) had not visited the site until the experiment. Considering that the actual Web site was used in this experiment, there may be a potential biasing effect caused by prior visiting experience. The chi-squared test indicated that the American students and the Korean students do not statistically differ in prior visiting experience to the HP site at the .05 level (see Table 6-5).

Prior brand attitudes were also explored with a one-item scale (poor/excellent), ranging from 1 (bad) to 9 (good). As might be expected from the fact that HP is one of the well-known American brands, the American subjects showed a higher positive attitude toward the brand (6.75) than the Korean subjects (6.08). Even though the between-groups t-test for attitude toward HP showed that there is a significant difference between the two countries at the .01 level, both groups of subjects seemed to have a positive attitude toward the brand.

Table 6-5. Prior visiting experience to the HP Web site by nationality

	Total (%)	American (%)	Korean (%)	χ^2	Sig.
Hp site visitor	96 (24.9)	45 (23.0)	51 (27.0)	.83	.36
Non-Hp site visitor	289 (75.1)	151 (77.0)	138 (73.0)		
Total	385 (100)	196 (100)	189 (100)		

Table 6-6. Prior brand attitude toward Hewlett Packard

	Total (N=385) Mean (SD)	American (N=196) Mean (SD)	Korean (N=189) Mean (SD)	t	Sig.
Attitude toward HP	6.42 (1.62)	6.75 (1.63)	6.08 (1.53)	4.16	.00

Assumptions in Factor Analysis

This section involves testing the assumptions underlying a series of multivariate analyses of this study. As already mentioned in research methods, the two major multivariate analyses of this study (i.e., structural equation modeling and ANOVA) assessed causal relationships or group differences on a number of latent variables based on the results of the four factor analyses: motivations for using the Internet, actual interactive experience, future intention of interactivity, advertising effectiveness measurements. Therefore, this study tested the assumptions underlying this factor analysis in terms of the following four aspects: normality, Bartlett test of sphericity, measure of sampling adequacy (MSA), and individual MSA value for each variable. In this process, observed variables of the four factor analyses were mainly analyzed by the assumption check.

First, normality of each variable was examined by the skewness and kurtosis values. According to Hair et al. (1998), calculated values of skewness and kurtosis exceeding ±2.58, which is a critical value at the .01 level, reject the assumption about the normality of the distribution. Table 6-7 presents the descriptive statistics of each observed variable in terms of its mean, standard deviation (SD), skewness, and kurtosis. As seen from the table, no statistic value of either skewness or kurtosis exceeded ±2.58 so that the null hypothesis about the normality of the distribution was rejected at the .01 probability level.

Second, the Bartlett test of sphericity is a statistical test for the appropriateness of factor analysis in terms of correlations among the observed variables (Hair et al. 1998). Table 6-8 shows that the correlations for each of the four factor analyses were significant

at the .0001 level. This provided the statistical probability that the correlation matrix had significant correlations among at least some of the variables. In other words, the data matrix had sufficient correlations to justify the application of factor analysis.

Table 6-7. Descriptive statistics of each observed variable

	Mean	SD	Skewness	Kurtosis	MSA
Motivations for using the Internet					
To learn about unknown things	5.08	1.30	-.49	.08	.77
To pass time	5.52	1.35	-1.00	.87	.81
I wonder what other people said	4.03	1.68	-.10	-.98	.76
To keep up with what's going on	4.91	1.43	-.51	-.23	.87
It's easier to use	5.64	1.35	-1.16	1.23	.73
It's a habit	4.86	1.60	-.62	-.34	.81
To learn about useful things	5.11	1.25	-.45	-.01	.77
To express myself freely	3.54	1.56	.13	-.69	.77
It's convenient to use	5.90	1.14	-1.09	1.12	.72
I just like to surf the Internet	4.60	1.48	-.35	-.50	.85
It's enjoyable	5.17	1.28	-.49	.08	.81
It's a good way to do research	6.01	1.11	-1.12	.80	.84
To meet people with my interest	3.89	1.70	.00	-.89	.77
I can use it anytime anywhere	5.28	1.49	-.63	-.32	.74
It's entertaining	5.17	1.30	-.63	.12	.81
I can get what I want for less effort	5.77	1.14	-.88	.84	.86
Future Intention of interactivity					
Would participate in customer discussion	3.26	1.66	.30	-.74	.72
Would sign in the site to get information	3.85	1.65	.10	-.85	.83
Would contact the company if necessary	3.01	1.57	.56	-.36	.82
Would the use search engine at this site	4.14	1.59	-.20	-.64	.84
Would provide my feedback to the site	3.15	1.43	.20	-.74	.76
Would use multimedia features	4.02	1.55	-.10	-.50	.79
Would stay for a while to look at the details	4.62	1.71	-.39	-.74	.77
Would click into deeper links	4.96	1.50	-.62	-.18	.79

(Continued)

Table 6-7. - Continued

	Mean	SD	Skewness	Kurtosis	MSA
Experience of interactivity					
This site provides a variety of messages	4.89	1.33	-.28	-.48	.89
This site utilizes a search engine	4.83	1.40	-.26	-.55	.90
This site enabled interpersonal communication	4.11	1.37	-.07	-.33	.86
I fully consumed multimedia features	4.32	1.36	.06	-.52	.86
I felt like talking with a sales person	3.55	1.46	.09	-.53	.87
I had a great deal of control at the site	5.19	1.44	-.71	-.04	.86
This site answered my questions	4.37	1.29	-.24	-.43	.87
This site facilitated contacting the company	4.67	1.44	-.11	-.57	.90
Advertising effectiveness measurements					
This site builds a relationship with me	4.31	1.28	-.24	-.15	.88
I would like to visit this site again	4.33	1.42	-.31	-.35	.90
I am satisfied with the service of this site	4.64	1.34	-.34	-.21	.85
I feel comfortable in surfing this site	4.94	1.47	-.52	-.33	.84
This site is a good place to spend my time	3.28	1.51	.29	-.59	.87
I would rate this site as one of the best	3.98	1.39	-.22	-.39	.91
Good / Bad	5.31	1.15	-.76	1.05	.82
Pleasant / Unpleasant	5.01	1.24	-.80	1.42	.88
Favorable / Unfavorable	5.17	1.19	-.68	.70	.83
Likely / Unlikely	4.69	1.66	-.63	-.34	.75
Probable / Improbable	4.69	1.62	-.58	-.33	.75
Possible / Impossible	4.88	1.46	-.49	-.20	.88

Table 6-8. Bartlett test of sphericity for the four factor analyses

Factor Analysis	Approx. χ^2	df	Sig.
Motivations for using the Internet	1834.89	120	.000
Future intention of interactivity	1023.83	28	.000
Experience of interactivity	827.53	28	.000
Advertising effectiveness measurements	2674.17	66	.000

Third, the overall measure of sampling adequacy (MSA) is another statistical test to quantify the degree of intercorrelations among the variables and the appropriateness of factor analysis (Hair et al. 1998). This index ranges from 0 to 1, reaching 1 when each variable is perfectly predicted without error by the other variables. According to Hair et al. (1998), this measurement can be interpreted with the following standard: .80 or above, meritorious; .70 or above, middling; .60 or above, mediocre; .50 or above, miserable; and below .50, unacceptable. As seen from Table 6-9, each MSA value of the four factor analyses ranged from .79 to .85. That means the set of variables for each factor analysis collectively meets either the meritorious or the middling level of sampling adequacy.

Table 6-9. Overall measure of sampling adequacy for the four factor analyses

Factor Analysis	Measure of Sampling Adequacy
Motivations for using the Internet	.79
Future intention of interactivity	.79
Experience of interactivity	.87
Advertising effectiveness measurements	.84

Finally, the MSA for individual variables also indicates the appropriateness of factor analysis, and this measurement follows the same guidelines as the overall MSA (Hair et al. 1998). The individual MSA for each variable also showed that every variable fell in the acceptable range with an MSA value higher than .72 except for two variables, "I felt like reading a print ad (.55)" and "I participated in the customer discussion (.47)" (see Table 6-7). It was shown that all the tests of assumption provided an adequate basis for the empirical examination of factor analysis on both an overall basis and for each variable, so further data analyses were made on continuance of these assumption checks.

Exploratory Factor Analysis

In this study, a series of exploratory factor analyses identified the expected underlying structures (i.e., factors) among the observed variables from an exploratory approach. For instance, the factor analysis for Internet usage motivations was assessed to identify the four underlying dimensions: information, convenience, entertainment, and social interaction. With respect to perceived interactivity, the factor analysis results between future intention of interactivity and actual interactive experience were compared to select one type of interactivity that can effectively derive the human-message and the human-human interactions for further analysis. In addition, the factor analysis for advertising effectiveness measurements was examined in terms of the three underlying dimensions: attitude toward the site, attitude toward the brand, and purchase intention.

In addition, factor analysis also created appropriate summated scales for further multivariate analyses of this study: structural equation modeling and ANOVA. In this process, all of the observed variables loading highly on a certain factor were averaged, and the average score of the variables were supposed to represent the multiple aspects of a concept in a single measure. Hair et al. (1998) argued that the summated scales reduce measurement error by using multiple indicators to reduce the reliance on a single variable, while maintaining parsimony in the number of variables.

Finally, factor analysis provided empirical foundations for scale construction in terms of reliability and validity (Kline 1998). With respect to reliability, the consistency of the multi-item scales was assessed in terms of Cronbach's alpha, the most widely used measure for internal consistency. The generally agreed upon lower limit for Cronbach's alpha is .70, although it may decrease to .60 in exploratory research (Hair et al. 1998). On the other hand, since most scales of this study were adopted from prior research that

defined the character and nature of each construct, it was assumed that the scales have face validity and content validity. In addition, factor analysis also provided an empirical assessment of the summated scales in terms of convergent validity and discriminant validity. According to Kline (1998), a set of observed variables within the same construct show convergent validity if their inter-item correlations are at least moderate in magnitude. On the other hand, if the estimated correlations among different constructs are not excessively high, then there is evidence for discriminant validity.

In the following section, the results from a series of factor analyses for the four major constructs (motivations for using the Internet, future intention of interactivity, actual interactive experience, and advertising effectiveness measurements) are presented in terms of the above three aspects of factor analysis.

Internet Usage Motivations

With eigenvalues of 1.00 or higher and factor loadings of .40 or higher as the criteria, four factors were yielded by explaining 58.40 percent of the variance (see Table 6-10). In other words, 58.40 percent of the total variance was represented by the information contained in the factor matrix of this four-factor solution. Since the total percentage of trace can be regarded as an index to determine how well a particular factor solution accounts for what all the variables together represent, the index for this solution (58.40 percent) was considered relatively high.

In terms of the four underlying constructs of Internet usage motivation, the entertainment motivation had an eigenvalue of 4.26 and explained 26.59 percent of the common variance. The social interaction motivation had an eigenvalue of 2.23 and explained 13.97 percent of the common variance. The convenience motivation had an eigenvalue of 1.64 and explained 10.25 percent of the common variance. The

information motivation had an eigenvalue of 1.22 and explained 7.60 percent of the common variance.

As Table 6-10 indicates, all items' loadings on their corresponding factors were higher than .40, and a visual examination of the inter-item correlations among a set of observed variables within the same construct revealed that all the correlations were significant at the .01 level. Therefore, it was assumed that the scales derived from this factor analysis would have convergent validity. Considering that varimax rotation derives mathematically independent factors, it was also expected that this method would increase discriminant validity in this analysis. However, the reliability (Cronbach's alpha) of the resulting multi-item scales was considered moderate, as the reliability value ranged from .65 (the convenience motivation) to .78 (the entertainment motivation).

Future Intention of Interactivity

Two dimensions of the perceived interactivity based on future intention were yielded by explaining 61.85 percent of the variance (see Table 6-11). The human-message interaction had an eigenvalue of 3.45 and explained 43.07 percent of the common variance. On the other hand, the human-human interaction had an eigenvalue of 1.50 and explained 18.78 percent of the common variance. Considering the portion of variance explained by each factor, it was shown that the human-message interaction accounts for a larger portion of variance associated with the set of variables being analyzed.

The scales derived from this factor analysis seemed to have convergent validity, as all the factor loadings were higher than .57. Furthermore, a visual examination of the inter-item correlations among a set of observed variables within the same construct also revealed that all the correlations were significant at the .01 level. On the other hand, the

reliability (Cronbach's alpha) of the resulting multi-item scales was considered

meritorious, as each construct showed the reliability value of .78 (the human-message

interaction) and .79 (the human-human interaction) respectively.

Table 6-10. Factor analysis of Internet usage motivations

Item	Factor Loadings				Commnlty
	Factor 1	Factor 2	Factor 3	Factor 4	
Entertainment					
It's entertaining	**.79**	.15	.10	.22	.71
It's enjoyable	**.72**	.09	.19	.18	.60
I just like to surf the Internet	**.53**	.10	.15	.08	.33
To pass time	**.49**	.10	.12	.06	.27
It's a habit	**.46**	.24	.09	-.05	.28
Social Interaction					
I wonder what other people said	.10	**.76**	-.07	.08	.60
To express myself freely	.19	**.73**	-.003	.05	.56
To meet people with my interest	.31	**.61**	-.03	-.06	.47
To keep up with what's going on	.05	**.47**	.11	.36	.37
Convenience					
It's convenient to use	.15	-.07	**.83**	.16	.74
It's easier to use	.04	.35	**.52**	.12	.41
I can get what I want for less effort	.27	-.02	**.42**	.27	.32
I can use it anytime anywhere	.19	-.05	**.42**	.06	.22
Information					
To learn about useful things	.11	.14	.14	**.75**	.61
To learn about unknown things	.08	.10	.10	**.64**	.43
It's a good way to do research	.19	-.13	.32	**.43**	.35
Eigenvalue	4.26	2.23	1.64	1.22	
% of Variance explained	26.59	13.97	10.25	7.60	
Cumulative %	26.59	40.56	50.80	58.40	
Cronbach's α	.78	.76	.65	.67	

Table 6-11. Factor analysis of future intention of interactivity

Item	Factor Loadings		Communality
	Factor 1	Factor 2	
Human-Message Interaction			
I would click into deeper links	**.76**	.13	.60
I would stay longer for details	**.69**	.10	.49
I would use multimedia features	**.64**	.22	.46
I would use a search engine	**.57**	.23	.38
Human-Human Interaction			
I would participate customer discussions	.00	**.76**	.57
I would provide my feedback to the site	.20	**.71**	.55
I would contact the company	.27	**.62**	.46
I would sign in the site for information	.34	**.59**	.46
Eigenvalue	3.45	1.50	
% of Variance explained	43.07	18.78	
Cumulative %	43.07	61.85	
Cronbach's α	.78	.79	

Experience of Interactivity

In contrast to the results of future intention of interactivity, factor analysis could not define the underlying structure in terms of the experience of interactivity (see Table 6-12). With eigenvalues of 1.00 or higher as the criterion, only one factor was yielded by explaining 44.87 percent of the variance, which is considered unacceptable. Therefore, it was impossible to classify subjects' experience of interactivity into the human-message interaction and the human-human interaction, as well as convergent and discriminant validity. Regarding this result, it was assumed that forced exposure to the site under experimental circumstance may account for the dominance of one dimension of interactivity. In other words, placing subjects in an experiment situation may simply set them for a particular mode of interactivity. This possible biasing effect may suppress otherwise naturally occurring real interactivity behavior. As it turned out, future

intention of interactivity was selected as the major construct of interactivity for further

analysis.

Table 6-12. Factor analysis of experience of interactivity

Item	Factor Loading	Communality
This site provides a variety of messages	.69	.47
I fully consumed multimedia features	.68	.46
This site answered my questions	.66	.43
I had a great deal of control at the site	.63	.40
I felt like talking with a sales person	.58	.34
This site enabled interpersonal communication	.58	.34
This site utilizes search engine	.57	.32
This site facilitated contacting the company	.46	.22
Eigenvalue	3.59	
% of Variance explained	44.87	
Cumulative %	44.87	
Cronbach's α	.83	

Advertising Effectiveness Measurement

As proven by previous research on attitude toward the ad, factor analysis clearly

revealed three advertising effectiveness constructs by explaining 69.77 percent of the

variance. Attitude toward the site had an eigenvalue of 5.31 and explained 44.21 percent

of the common variance. Attitude toward the brand had an eigenvalue of 1.31 and

explained 10.89 percent of the common variance. Finally, purchase intention had an

eigenvalue of 1.76 and explained 14.68 percent of the common variance.

The scales derived from this factor analysis seemed to have convergent validity,

as all the factor loadings were higher than .51, and the inter-item correlations among a set

of observed variables within the same construct also indicated that all the correlations

were significant at the .01 level. On the other hand, the reliability (Cronbach's alpha) of

the resulting multi-item scales was considered highly acceptable, as each construct

showed a reliability value of .85 (attitude toward the site), .83 (attitude toward the brand),

and .89 (purchase intention) respectively.

Table 6-13. Factor analysis of advertising effectiveness measurement

Item	Factor Loadings			Communalty
	Factor 1	Factor 2	Factor 3	
Attitude toward the site				
I am satisfied with the service of this site	**.80**	.06	.32	.74
I would rate this site as one of the best	**.68**	.12	.18	.50
I feel comfortable in surfing this website	**.67**	-.01	.34	.56
I would like to visit this website again	**.66**	.32	.19	.58
This site is a good place to spend my time	**.63**	.17	.05	.43
This site builds a relationship with me	**.51**	.21	.09	.31
Purchase Intention				
Probable / Improbable	.20	**.94**	.19	.96
Likely / Unlikely	.15	**.87**	.21	.83
Possible / Impossible	.19	**.62**	.26	.49
Attitude toward the brand				
Good / Bad	.24	.25	**.85**	.85
Favorable / Unfavorable	.20	.25	**.76**	.67
Pleasant / Unpleasant	.22	.16	**.59**	.42
Eigenvalue	5.31	1.76	1.31	
% of Variance explained	44.21	14.68	10.89	
Cumulative %	44.21	58.89	69.77	
Cronbach's α	.85	.89	.83	

Measurement Model

Confirmatory Factor Analysis

As a submodel in structural equation modeling, the measurement model examines

preconceived thoughts on the actual structure of the data by assessing the extent to which

the data meet the expected structure (Hair et al. 1998). In other words, the measurement

model simultaneously specifies the indicators for each construct and assesses the

goodness-of-fit for the proposed factor solutions (Hair et al. 1998). In this study, the measurement model was estimated by confirmatory factor analysis before estimating the causal relationships by the simultaneous equation model. While exploratory factor analysis examined the underlying patterns of observed variables with a limited control over which observed variables belong to which factor, confirmatory factor analysis gave a complete control over the specification of indicators (i.e., observed variables) for each latent variable (i.e. factor) based on theoretical background or prior research.

Goodness-of-Fit Measures for Structural Equation Modeling

In this study, both the measurement model and the simultaneous equation model were assessed by various statistical tests of the goodness-of-fit for the acceptable level of fit. Hu and Bentler (1995) said that structural equation modeling has no single statistical test that best describes the strength of the model's goodness-of-fit. Instead, a number of goodness-of-fit indexes have been used in combination to assess the results of structural equation modeling. Table 6-14 presents the selected goodness-of-fit indexes, along with the conditions for good fit of each index, for this study.

Table 6-14. Summary of goodness-of-fit indexes

Measure of Fit	Abbreviation	Conditions for Good Fit
Likelihood-Ratio Chi-Square	χ^2	A nonsignficant value at the .05 level
Chi-Square to Degrees of Freedom Ratio	χ^2 / df	Lower than 3
Goodness-of-Fit Index	GFI	Higher than .90
Root Mean Square Residual	RMR	Lower than .09
Root Mean Square Error of Approximation	RMSEA	Lower than .06
Nonnormed Fit Index	NNFI	Higher than .90
Comparative Fit Index	CFI	Higher than .90

Even though there were dozens of goodness-of-fit indexes presented in previous studies using structural equation modeling, this study adopted some widely used fit indexes based on the guidelines of this method (Hair et al. 1998; Jöreskog and Sörbom 1993, and Kline 1998). First, the likelihood-ratio chi-square (χ^2) is the most fundamental measure of overall fit. Jöreskog and Sörbom (1993) said that chi-square is a kind of badness-of-fit measure because a small chi-square (i.e., statistically nonsignificant) corresponds to good fit and a large chi-square to bad fit. Since the index is too sensitive to sample size differences, a large chi-square value is shown when sample size exceeds 200 (Hair et al. 1998). Therefore, this index is mostly used in making comparisons between alternative models. Second, the chi-square is divided by the degree of freedom (χ^2/df) to examine the sensitivity of the chi-square statistic to sample size. Klein (1998) suggested that this ratio should be less than 3. Third, a goodness-of-fit index (GFI) represents the overall degree of fit from prediction compared with the actual data (Hair et al. 1998). Even though there is no absolute threshold level for acceptability of this index, a recommended value of GFI is .90 or higher. Fourth, a root mean square residual (RMR) is an average of the residuals between observed and estimated input matrices (Klein 1998). A recommended value of RMR is .09 or lower. Fifth, a root mean square error of approximation (RMSEA) is representative of the goodness-of-fit that could be expected from the assumption that the model is estimated in the population (Hair et al. 1998). A recommended value of RMSEA is .06 or lower. Sixth, a non-normed fit index (NNFI), also known as the Tucker-Lewis Index, is a measure of parsimony into a comparative index between the proposed model and the null model, in which observed variables are assumed to be uncorrelated (Kline 1998). A recommended value of NNFI

is .90 or higher. Finally, a comparative fit index (CFI) also indicates the proportion in the improvement of the overall fit of the proposed model relative to the null model. A recommended value of CFI is .90 or higher as well.

Estimation of the Measurement Model

The measurement model was estimated based on the findings of the exploratory factor analyses. The focus of structural equation modeling is not on individual observations but on the pattern of relationships across variables (Hair et al. 1998). That means a correlation or covariance matrix among the observed variables is used as the input for structural equation modeling. In this study, a correlation matrix was used because correlations make possible direct comparisons of constructs with different units of measurements (Hair et al. 1998). Initially, the 37 observed variables (16 variables of Internet usage motivations, 1 variable of duration of time on a Web site, 8 variables of perceived interactivity and 12 variables of advertising effectiveness) were input to a confirmatory factor analysis and these variables were evaluated for modifications to the measurement model. Table 6-15 presents the correlations among the observed variables used in this analysis.

For the measurement model, confirmatory factor analysis was run on the correlation matrix of the 37 observed variables. It was of interest to see if these items would identify the hypothesized four-factor solution for Internet usage motivations, the two-factor solution for perceived interactivity, and the three-factor solution for advertising effectiveness measurement. Table 6-16 shows a summary of models tested for the measurement model in terms of goodness-of-fit indices.

Table 6-15. Correlation matrix of the observed variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
01. learn	1																													
02. pasttime	105	1																												
03. otherspl	142	190	1																											
04. useful	512	128	158	1																										
05. freeexps	124	098	563	178	1																									
06. convent	202	198	-006	235	-004	1																								
07. justlike	145	354	097	189	208	223	1																							
08. enjoyabl	180	394	141	253	203	308	429	1																						
09. research	323	151	-056	361	-063	371	134	276	1																					
10. meetalk	068	117	491	024	551	-049	165	274	004	1																				
11. useany	111	067	-069	091	012	390	184	145	266	107	1																			
12. entereg	225	430	197	292	260	216	435	660	249	343	248	1																		
13. lessoffi	253	116	-014	263	061	416	155	321	381	084	280	338	1																	
14. duration	089	-045	156	028	084	-055	-018	025	086	-085	-006	-022		1																
15. laginbhp	103	028	065	080	179	058	061	051	037	159	093	084	059	000	1															
16. phoemtal	111	-027	071	035	194	072	080	056	-019	145	071	103	065	055	582	1														
17. usesrch	141	-005	-157	-020	124	-043	040	147	-035	142	018	092	060	373	364	248	1													
18. usefla	134	055	282	-055	338	-034	091	019	042	088	008	154	076	424	464	480	248	1												
19. usemulti	157	007	-146	059	-034	091	042	088	112	176	-105	117	123	-064	291	246	480	374	1											
20. staylong	149	127	-131	133	-073	156	018	112	176	-184	-086	-105	119	240	210	347	229	476	499	1										
21. deeplink	203	-094	-142	140	-121	169	028	076	193	193	086	075	-089	365	295	444	385	418	476	176	1									
22. buildup	143	008	123	091	-002	005	003	003	-184	135	-020	197	053	431	388	277	385	338	316	225	357	1								
23. again	170	022	-021	152	105	107	032	078	121	111	053	116	097	042	527	424	343	197	337	448	578		1							
24. spadtime	129	-012	102	103	042	103	210	060	157	157	071	102	093	338	469	307	343	190	209	242	250	412	546	1						
25. hesitate	028	-085	-071	099	078	002	040	128	140	119	157	024	036	345	288	349	016	002	177	286	332	250	412	355	1					
26. goodbad	166	078	-153	099	146	094	119	145	140	013	094	102	135	216	216	248	269	243	178	059	182	201	504	249	355	1				
27. pleasant	142	035	-161	112	-123	196	094	080	119	145	145	024	099	173	250	243	178	059	184	211	206	324	371	504	272	592	1			
28. favorabl	225	073	-140	164	-046	219	131	145	179	179	013	094	102	250	265	243	178	182	137	265	254	364	233	248	233	522	761	1		
29. likely	079	-001	058	159	155	130	088	057	069	069	057	099	042	137	292	137	182	125	135	142	249	431	249	282	272	441	272	381	1	
30. probable	131	027	098	156	190	088	057	069	069	056	048	082	125	143	305	143	201	140	155	176	313	467	298	282	248	439	301	422	888	1

Table 6-16. Summary of models tested for the measurement model

	Model 1	Model 2	Model 3
Correlated Error	None	None	1
χ^2	1617.41	724.90	695.97
df	585	361	360
χ^2 / df	2.76	2.01	1.93
GFI	.80	.89	.89
RMR	.074	.051	.052
RMSEA	.074	.052	.050
NNFI	.81	.90	.91
CFI	.83	.92	.93

As shown in Table 6-16, the initial measurement model (Model 1) was shown statistically unacceptable due to the poor results of several goodness-of-fit indexes except for χ^2 / df and RMR. Therefore, it was inevitable that the measurement model has to proceed through numerous modifications to improve the model fit. The model was evaluated according to the following modification guidelines provided by Benson and El-Zahhar (1994) and Kline (1998).

- Eliminate a variable(s) that shows large modification indices on other factors.
- Eliminate a variable(s) that shows large modification indices for item residual.
- Eliminate two or more items with high standardized residuals.
- Correlate errors between the observed variables that show large modification indices or high standardized residuals.

In this process, one observed variable at a time was deleted until the results showed that elimination of additional variables would not improve the fit of the model. This modification process resulted in the elimination of seven observed variables: three from Internet usage motivations ("To keep up with what's going on," "It's easier to use," and "It's a habit"); one from perceived interactivity ("I would participate in customer

discussions."); and three from advertising effectiveness ("I feel comfortable in surfing this website," "I am satisfied with the service of this website," and "Possible / Impossible"). As a result, the modified measurement model (Model 2) composed of thirteen items of Internet usage motivation items, seven items of perceived interactivity, five items of attitude toward the site, three items of attitude toward the brand, and two items of purchase intention. It was shown that the modified model was clearly improved from the initial model (Model 1) across most goodness-of-fit indexes (see Table 6-16).

Even though Model 2 fit the data very well, correlated errors among the observed variables that show large modification indices or high standardized residuals were also examined to improve the measurement model. In this process, the two variables, "To learn about things that are useful" (useful) and "To learn about things that I haven't known" (learn), showed a large value within the modification indices and also indicated a large standardized residual. This implies that a considerable decrease in chi-square would be expected if the errors for "useful" and "learn" were correlated in the model. In addition, these two variables seemed to share similar meanings and belong to the same factor, information motivation. Therefore, the correlated error between the two variables was considered theoretically, empirically acceptable to be included in the final measurement model (Model 3).

The final measurement model (Model 3) was selected on the basis of the chi-square difference ($\chi^2_{difference}$) test, as well as the selected goodness-of-fit results (see Table 6-16). First of all, $\chi^2_{difference}$ was used to evaluate the significance of the improvement in overall fit, as the models were modified (Kline 1998). In this process, $\chi^2_{difference}$ between Model 2 and Model 3 was assessed because Model 3 modified Model 2 by including a

correlated error. As shown in Table 6-16, χ^2 of Model 2 was 724.90 with the degrees of freedom of 361, while that of Model 3 was 695.97 with the degrees of freedom of 360. The difference in the degrees of freedom between the two models (361-360) indicated that a correlated error was included in Model 3. Therefore, $\chi^2_{difference}$ between the two models equaled to 10.12 (724.90 − 695.97), which is significant at the .05 level with a single degree of freedom (361-360). This implied that the fit of the model with the correlated error (Model 3) is significantly better than that of the model without the correlated error (Model 2). Second, the χ^2 / df ratio of 1.93 was far lower than 3, the criterion for a good fit. Third, a value of GFI (.89) indicated a moderate fit because this value is a little lower than .90. Fourth, a value of RMR (.052) was quite acceptable because this value is much lower than .09. An acceptable value of RMR means that the average discrepancy between the observed and predicted data matrix was small in this model. Fifth, this model also seemed to fit adequately in terms of the discrepancy per degrees of freedom because the value of RMSEA (.050) was lower than .06. Finally, the values of CFI (.93) and NNFI (.91) also showed a significant improvement of the overall fit of Model 3 because these values are higher than .90. In conclusion, the final measurement model (Model 3) fit the data quite well across most goodness-of-fit indexes, so this model was selected as the base model for the simultaneous equation model. Figure 6-1 presents the path diagram of the final measurement model. More detailed results of the final measurement model are included in Appendix C.
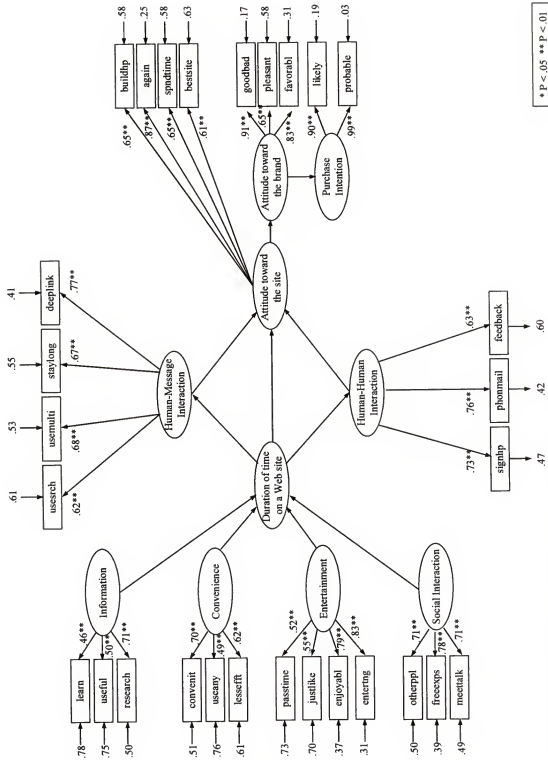
Figure 6-1. Path diagram of the final measurement model

* P < .05 ** P < .01

Simultaneous Equation Model

Path Analysis

In the second step of structural equation modeling, the simultaneous equation model examines preconceived causal relationships among a number of latent variables (i.e., constructs) by specifying the relationships in a series of regression-like equations simultaneously (Hair et al. 1998). In other words, structural equation modeling integrates a measurement model that simultaneously defines the indicators for each latent variable with a simultaneous equation model that identifies multiple causal relationships among the latent variables. For this reason, a structural equation model is also construed as a "hybrid model" because this model synthesizes both the measurement and the simultaneous equation models (Kline 1998). In this study, the simultaneous equation model was estimated by path analysis, which is considered the procedure for empirical examination of the strength of each relationship (i.e., path). Following from the evaluation of measurement model, the simultaneous equation model was also assessed by the same statistical tests of the goodness-of-fit for the acceptable level of fit.

Two-Step Modeling

A structural equation model (i.e., synthesis of the measurement model and the simultaneous equation model) is developed by two-step modeling (Kline 1998). The first step involves estimating an acceptable measurement model throughout a series of modification processes. Given an acceptable measurement model, the second step is to estimate an acceptable simultaneous equation model and then to compare the fit of the simultaneous equation model with that of the measurement model with the $\chi^2_{\text{difference}}$ test.

In this process, it should be noted that the $\chi^2_{\text{difference}}$ test of two-step modeling is interpreted differently from that of the estimation of measurement model. In estimating a

measurement model, a significant $\chi^2_{difference}$ indicates an improvement in fit of the second measurement model from the first measurement model. However, in two-step modeling, the fit of a simultaneous equation model (i.e., the second model) should be equivalent to that of a measurement model (i.e., the first model) because the goal of structural equation modeling is to find a parsimonious simultaneous equation model that still equally explains the measurement model well (Kline 1998). In other words, the $\chi^2_{difference}$ test should not be significant enough to reject the simultaneous equation model in favor of the measurement model in two-step modeling. Therefore, a nonsignificant $\chi^2_{difference}$ indicates an acceptable fit of the simultaneous equation model, along with an acceptable fit of the measurement model in two-step modeling.

Estimation of the Simultaneous Equation Model

The simultaneous equation model was estimated based on the findings of path analyses. The effects among the latent variables were examined to identify the causal relationships based on the hypothesized model. Table 6-17 shows a summary of models tested for the simultaneous equation model in terms of goodness-of-fit indices.

Table 6-17. Summary of models tested for the simultaneous equation model

	Model A	Model B	Model C
Correlated Error	1	1	6
χ^2	972.70	807.58	711.80
df	388	380	375
χ^2 / df	2.51	2.13	1.90
GFI	.86	.88	.89
RMR	.110	.067	.065
RMSEA	.061	.055	.048
NNFI	.85	.89	.93
CFI	.87	.90	.91

The initial simultaneous equation model (Model A) estimated the expected paths based on the final measurement model (Model 3). Table 6-17 shows that Model A fit the data poorly, as most goodness-of-fit indexes did not achieve the minimum level of model fit. Therefore, modifications to Model A had to be made by adding or deleting estimated parameters. Based on both theoretical and empirical considerations, Model B added direct paths from Internet usage motivations to perceived interactivity in addition to the mediator variable (i.e., duration of time on the site). With respect to a theoretical rationale for this assumption, Swanson (1987) said that motivations were thought to be capable of playing a significant role in affecting the audiences' behavior to a media message. On the other hand, an empirical examination of modification indexes revealed that a statistically significant reduction in the chi-square would be expected when the proposed paths were added to the simultaneous equation model.

The second model (Model B) improved the model fit over Model A. That means adding paths from Internet usage motivations to perceived interactivity estimated the simultaneous equation model reasonably well. Nonetheless, Model B still showed a moderate level of fit because some goodness-of-fit indexes, such as GFI and NNFI, did not achieve a minimum level of good fit. Therefore, correlated errors among the variables that showed large modification indices or high standardized residuals were also examined to improve the simultaneous equation model. According to the modification indices, the five correlated errors between the following variables were relatively high: (1) the human-message interaction and the human-human interaction; (2) "Surfing this site is a good way to spend my time" (spndtime) and "I would rate this site as one of the best" (bestsite); (3) "I would click into deeper links" (deeplink) and "I would stay longer for

details" (staylong); (4) "I wonder what other people said" (otherppl) and "I would

provide my feedback to the site" (feedback); and (5) "I would use multimedia features"

(usemulti) and "I would provide my feedback to the site" (feedback). It was assumed that

the five pairs of variables, as well as "useful" and "learn" from the measurement model,

have similar meanings or belong to the same factor. Therefore, it was reasonable to

claim that the correlated error between the variables can be based on both theoretical and

empirical considerations in model respecification. In other words, these variables shares

common causes, and the net effects on one variable outside the model were correlated

with the net effects on the other variable outside the model. Therefore, correlated errors

between the six pairs of variables were included in the final simultaneous model (Model

C), one at a time.

The final simultaneous model (Model C) was selected on the basis of the chi-

square difference ($\chi^2_{\text{difference}}$) test, as well as the selected goodness-of-fit results (see Table

6-17). First, $\chi^2_{\text{difference}}$ between Model B and Model C equaled 95.78 (807.58-711.80),

which is significant at the .05 level with 5 degrees of freedom (380-375). This implied

that the fit of the model with the correlated error (Model C) is significantly better than

that of the model without the correlated error (Model B). Second, the χ^2 / df ratio of 1.90

was far lower than 3, the criterion for a good fit. Third, a value of GFI (.89) indicated a

moderate fit because this value is a little lower than .90. Fourth, a value of RMR (.065)

was good because this value is much lower than .09. Fifth, this model also seemed to fit

adequately in terms of the discrepancy per degrees of freedom because the value of

RMSEA (.048) was lower than .06. Finally, the values of CFI (.93) and NNFI (.91) also

showed a significant improvement of the overall fit of Model C because these values are

higher than .90. In conclusion, the final simultaneous equation model (Model 3) fit the

data very well across most goodness-of-fit indexes, so this model was selected as the base

model for the $\chi^2_{difference}$ test with the measurement model in the next stage.

Comparison of the Model Fits

In order to test whether estimating the simultaneous equation model results in a

significant decrement in fit, the fit of Model C was compared to the fit of the final

measurement model (Model 3). The $\chi^2_{difference}$ test between the final measurement model

and the simultaneous equation model with correlated errors was shown as

$$\chi^2_{difference} = \chi^2_{sem} - \chi^2_{mm} = 711.80 - 695.97 = 15.83, \text{ and the degrees of freedom were}$$

$$df = df_{sem} - df_{mm} = 375 - 360 = 15.$$

Since the critical value of $\chi^2_{.05,15}$ is 25.00, Model C (simultaneous equation

model) in favor of Model 3 (measurement model) was not rejected in this analysis. This

implies that the measurement model and the simultaneous equation model were virtually

identical without a significant decrement in fit. As a result, Model C was selected as the

final structural equation model in this study. Figure 6-2 presents the full path diagram of

the final structural equation model, and more detailed results of this model are also

presented in Appendix D.
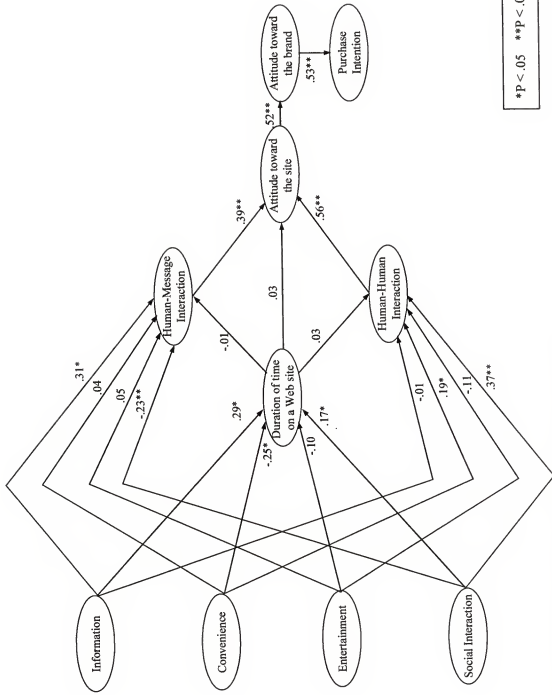
Figure 6-2. Path diagram of the final structural equation model

*P < .05 **P < .01

Causal Model Analysis

In this section, the individual path coefficients were examined based on the causal relationships in this model. To evaluate the estimated causal relationships, the actual size of each parameter was assessed in terms of the standardized beta coefficients (β). The standardized coefficients determined the relative importance of each variable, and the significance tests for the coefficients provided the basis for accepting or rejecting the proposed causal relationships among the latent variables.

Effects of Internet Usage Motivations

Table 6-18 presents the direct and the indirect effects of Internet usage motivations on the endogenous variables in terms of standardized beta coefficients (β). Hypothesis 1 examined the causal relationships between the motivations for using the Internet and the duration of time on a Web site (i.e., exposure to the site). On the other hand, research question 1 dealt with the differences in the effects of individual Internet usage motivations on the duration of time, and research question 2 examined the effects of motivations on the two types of perceived interactivity.

Three out of the four Internet usage motivations (information, convenience, and social interaction) showed significant direct effects on the duration of time on a Web site. That means consumers' behavior at the site may be affected by certain motivations for using the Internet. Therefore, hypothesis 1 was partially supported. With respect to the individual effects of motivations (research question 1), the direct effects of both the information motivation (β = .29, $p < .05$) and the social interaction motivation (β = .17, $p < .05$) to the duration of time are statistically significant. However, the convenience

motivation shows a significant negative effect on the duration of time on a Web site.
Even though it is a nonsignificant effect, the entertainment motivation also shows a
negative effect on the duration of time. It is assumed that both convenience and
entertainment motivations for using the Internet may have negatively affected subjects'
duration of time at the site, especially under the forced exposure, rather than voluntary
visits, to the HP site.

Table 6-18. Effects (β) of exogenous latent variables (Internet usage motivations)

	Information	Convenience	Entertainment	Social Interaction
	Direct Effects Indirect Effects	Direct Effects Indirect Effects	Direct Effects Indirect Effects	Direct Effects Indirect Effects
Duration of Time	.29* -	-.25* -	-.10 -	.17* -
Human-Message Int.	.31* .00	.04 .00	.05 .00	-.23** .00
Human-Human Int.	-.01 .01	.19* -.01	-.11 .00	.37** .00
Attitude t/d Site	- .12	- .11	- -.04	- .12
Attitude t/d Brand	- .06	- .06	- -.02	- .06
Purchase Intention	- .03	- .03	- -.01	- .03

* $p < .05$, ** $p < .01$

Following from the causal relationship between the motivations and the time,
research question 2 examined the differences in the effects of individual Internet usage
motivations in regard to the level of perceived interactivity on a Web site. As already
mentioned, the duration of time seemed to be a weak predictor of perceived interactivity
in the initial simultaneous equation model (Model A). Therefore, this study also

estimated the direct effects of the four motivations on the two types of interaction: the human-message and the human-human interactions. The human-message interaction was most strongly affected by the information motivation ($\beta = .31$, $p < .05$), while this type of interactivity was also negatively affected by the social interaction motivation ($\beta = -.23$, $p < .05$). On the other hand, both convenience motivation and entertainment motivation were nonsignificant predictors to the human-message interaction. With respect to the human-human interaction, the social interaction motivation ($\beta = .37$, $p < .01$) and the convenience motivation ($\beta = .19$, $p < .05$) are significant predictors of perceived human-human interaction on a Web site. However, the information motivation and the entertainment motivation were not found to significantly contribute to this type of interactivity.

Effects of Duration of Time

Table 6-19 presents the direct and the indirect effects of endogenous latent variables on other endogenous variables in terms of standardized beta coefficients (β). The second set of hypotheses concerned the predictive utility of the duration of time on a Web site for explaining the two types of perceived interactivity: the human-message and the human-human interaction.

As already mentioned in the estimation of the simultaneous equation model, the model revealed that duration of time had nonsignificant direct effects on the human-message interaction ($\beta = -.01$, $p > .05$) and the human-human interaction ($\beta = .03$, $p > .05$). One interpretation of this finding is that the duration of time as a single predictor of perceived interactivity was not enough to explain all the variances in perceived interactivity. Instead, the perceived interactivity was mostly predicted by the

simultaneous predictive power of the Internet usage motivation variables (see Table 6-18). Considering this result, it is assumed that no matter how much a subject stays online in the experiment, his/her intentions to use several interactive functions at the site were mainly affected by his/her major motivations for using the Internet. In sum, Hypothesis 2-1 and 2-2 were not supported by this analysis, as the duration of time on a Web site has an insignificant effect on both perceived human-message interactivity and human-human interactivity.

Table 6-19. Effects (β) of endogenous latent variables

	Duration of Time	Human-Message	Human-Human	A_{st}	A_b
	Direct Indirect	Direct Indirect	Direct Indirect	Direct Indirect	Direct Indirect
Human-Message	-.01	-	-	-	-
	-	-	-	-	-
Human-Human	.03	-	-	-	-
	-	-	-	-	-
Attitude t/d Site	.03	.39**	.56**	-	-
	.01	-	-	-	-
Attitude t/d Brand	-	-	-	.52**	-
	.02	.20**	.29**	-	-
Purchase Intention	-	-	-	-	.53**
	.01	.11**	.15**	.27**	-

* $p < .05$,   ** $p < .01$

Effects of Perceived Interactivity

The third set of hypotheses stated the direct effects of perceived interactivity on attitude toward the site. As expected, attitude toward the site was significantly affected by both types of interactivity (see Table 6-19). For instance, attitude toward the site was more affected by the human-human interaction ($\beta = .56$, $p < .01$) even though the human-

message interaction also had a significant direct effect on the variable ($\beta = .39, p < .01$).

Overall, the third set of hypotheses (3-1 and 3-2) was strongly supported, as the causal

relationships between the perceived interactivity and attitude toward the site were

significantly positive.

With respect to the indirect effects of perceived interactivity on the other

advertising outcomes, attitude toward the brand was significantly affected by the human-

human interaction, followed by the human-message interaction. The indirect effects (β)

were .29 and .20 ($p < .01$) respectively. On the other hand, the human-human interaction

had an indirect effect (β) of .15 ($p < .01$) on purchase intention, while the human-message

interactivity had a significant effect (β) of .11 ($p < .01$) on the latent variable. In sum, it

was shown that the human-human interaction was stronger than the human-message

interaction throughout the three types of advertising effectiveness measurements.

Effects of Attitude Toward the Site and Attitude Toward the Brand

The fourth set of hypotheses examined the causal relationships among the

advertising effectiveness measurements. Hypothesis 4-1 stated a positive effect of

attitude toward the site on attitude toward the brand, and Hypothesis 4-2 predicted a

positive effect of attitude toward the brand on purchase intention. In previous advertising

effectiveness research, attitude toward the ad has exerted a significant influence on

subsequent measures of advertising effectiveness, such as brand attitude, and purchase

intentions. Based on the assumption that measuring attitude toward the site (A_{st}) was

considered parallel to evaluating attitude toward the ad in traditional mass media (Chen

and Wells 1999), attitude toward the brand was strongly affected by attitude toward the

site ($\beta = .52, p < .01$) (see Table 6-19). In addition, the indirect effect of attitude toward

the site on purchase intention was also significantly positive ($\beta = .27$, $p < .01$). It should be noted that prior brand attitude was controlled in this structural equation model. When the effect of prior brand attitude was included in the causal relationship between attitude toward the site and attitude toward the brand, it was shown that the effect of prior brand attitude ($\beta = .47$, $p < .01$) was stronger than that of attitude toward the site ($\beta = .41$, $p < .01$) on attitude toward the brand. On the other hand, attitude toward the brand had a strong effect on purchase intention ($\beta = .53$, $p < .01$). In sum, Hypotheses 4-1 and 4-2 were strongly supported for explaining the causal relationships among the advertising effectiveness measurements.

Differences between Experimental Groups

In addition to the causal model analysis, the differences for various dependent variables (i.e., motivations for using the Internet, duration of time on a Web site, and perceived interactivity) were examined in terms of the two independent variables (i.e., involvement conditions and cultural contexts). To evaluate the effects of independent variables on the differences in dependent variables, ANOVA was used to determine the statistical difference in means between the experimental treatments. In comparing subjects in high and low involvement conditions, this study analyzed the two dependent variables, the duration of time on a Web site and perceived interactivity. Also, Internet usage motivations and the duration of time on a Web site were assessed in comparing subjects from high and low context cultures.

Differences between the Involvement Conditions

The fifth set of hypotheses predicted the presumed effect of the involvement condition on duration of time as well as levels of perceived interactivity on a Web site.

The results of the one-way ANOVA comparisons for the two groups (high and low involvement conditions) on the three aspects of Internet usage (duration of time on a Web site, human-message interactivity, and human-human interactivity), as well as the manipulation check for perceived involvement, are presented in Table 6-20. In order to specify the differences, as well as the similarities between the two groups, the mean scores of the three dependent variables were compared in this analysis. With respect to perceived interactivity, the mean scores of individual observed variables for each type of interactivity were also compared between the two groups. The variables that showed statistical differences between the two groups are underlined in the table.

Table 6-20. Differences between the high and low involvement conditions

	Total (N=385) Mean	High Involve (N=190) Mean	Low Involve (N=195) Mean	F	Sig.
Manipulation Check	4.48	5.18	3.81	116.15	.00
Duration of time on a site	7.69	8.49	6.91	6.55	.01
Human-Message Interactivity	4.43	4.53	4.34	2.19	.14
I would click into deeper links	4.96	5.05	4.87	1.49	.22
I would stay longer for details	4.62	4.59	4.66	.15	.70
I would use multimedia features	4.02	4.05	3.98	.19	.67
I would use search engine	4.14	4.35	3.93	6.77	.01
Human-Human Interactivity	3.32	3.40	3.23	1.81	.18
I would participate customer discussions	3.26	3.41	3.12	3.02	.08
I would provide my feedback to the site	3.15	3.16	3.13	.06	.81
I would contact the company	3.01	3.07	2.95	.56	.46
I would sign in the site for information	3.85	3.96	3.73	1.87	.17

In the comparison of the manipulation check between the high and low involvement subjects, the mean scores for the perceived involvement showed statistical significance at the .01 level. Based on the result of this analysis, it is clear that the high

involvement subjects perceived their situation as a high involvement one (M=5.18), while low involvement subjects perceived it as a low involvement one (M=3.81). The results of the manipulation check allowed further analysis regarding the differences between the two involvement conditions.

With respect to the comparison of duration of time on a Web site between the two groups, this dependent variable showed statistical significance at the .05 level. The high involvement subjects, who were asked to suggest a color inkjet printer under a hypothetical purchasing situation, spent more time on the HP site (M=8.49 minutes) than the low involvement subjects, who were asked to evaluate the visual elements of the site (M=6.91 minutes). Therefore, hypothesis 5-1 was supported in this analysis.

In hypotheses 5-2 and 5-3, subjects in a high involvement condition were expected to engage in a higher level of perceived human-message and human-human interactions than those in a low involvement condition. Contrary to the expectation, the differences between the two groups were not statistically significant in both types of interactivity at the .05 level except for one variable ("I would use search engine"). Even though the high involvement subjects showed a higher mean score in most aspects of perceived interactivity, it was not enough to generate statistically significant differences between the two groups. Therefore, hypotheses 5-2 and 5-3 were not supported.

Differences between the Cultural Contexts

The final set of hypotheses and research question 3 were to identify the effect of cultural context on the differences in motivations for using the Internet and perceived interactivity. Considering that media usage and its motives vary widely between high and low context cultures (Hong, Muderrisoglu, and Zinkhan 1987), it was assumed that Internet usage motivations would be different between the two cultures as well.

According to the comparison of mean scores for the four motivational factors between

the United States (i.e., low context culture) and Korea (i.e., high context culture), three of

the four motivations showed statistical significance, and these differences were

interpreted as the effects of the cultural context (see Table 6-21).

Table 6-21. Differences in motivations between the high and low context cultures

	Overall (N=385) Mean	U.S. Low Context (N=196) Mean	Korea High Context (N=189) Mean	F	Sig.
Information	5.40	5.56	5.24	11.24	.00
To learn about useful things	5.11	5.13	5.09	0.11	.74
To learn about unknown things	5.08	5.24	4.92	6.08	.01
It's a good way to do research	6.01	6.30	5.70	29.36	.00
Convenience	5.64	5.75	5.54	5.13	.02
It's convenient to use	5.90	6.12	5.67	15.23	.00
It's easier to use	5.64	5.42	5.86	10.75	.00
I can get what I want for less effort	5.77	5.85	5.68	2.13	.15
I can use it anytime anywhere	5.28	5.60	4.94	19.59	.00
Entertainment	5.06	5.08	5.04	0.15	.70
It's entertaining	5.17	5.15	5.20	0.13	.72
I just like to surf the Internet	4.60	4.78	4.42	5.67	.02
It's enjoyable	5.17	5.23	5.11	0.83	.36
To pass time	5.52	5.51	5.54	0.08	.77
It's a habit	4.86	4.77	4.95	1.32	.25
Social Interaction	4.09	3.41	4.80	184.47	.00
I wonder what other people said	4.03	3.06	5.04	204.50	.00
To express myself freely	3.54	2.87	4.23	90.61	.00
To meet people with my interest	3.89	3.14	4.67	98.24	.00
To keep up with what's going on	4.91	4.59	5.25	21.41	.00

The American subjects had a higher level of information (M=5.56) and

convenience motivations (M=5.75) in using the Internet than did the Korean subjects

(M=5.24 and 5.54 respectively) at the .05 level. On the other hand, the Korean subjects

showed a higher level of social interaction motivation (M=4.80) than did the American

subjects (M=3.41) at the .01 level. However, there was no statistically significant difference in entertainment motivation between the two cultures.

In hypotheses 6-1 and 6-2, subjects from a low context culture were expected to engage in a higher level of perceived human-message interactivity, while subjects from a high context culture were expected to show a higher level of human-human interactivity. As the motivations for using the Internet were different between the two cultures, the two types of interactivity were classified as either high or low context interactivity. Significant differences were found in both types of interactivity between the American and Korean subjects at the .001 level (see Table 6-22). As expected, the American subjects showed a higher level of perceived human-message interactivity (M=4.88) than did the Korean subjects (M=3.97), while the Korean subjects indicated a higher level of perceived human-human interactivity (M=3.59) than did the American subjects (M=3.05). Therefore, both hypotheses 6-1 and 6-2 were strongly supported by this analysis.

Table 6-22. Differences in interactivity between the high and low context cultures

	Overall (N=385) Mean	U.S. Low Context (N=196) Mean	Korea High Context (N=189) Mean	F	Sig.
Human-Message Interactivity	4.43	4.88	3.97	60.27	.00
I would click into deeper links	4.96	5.44	4.46	47.09	.00
I would stay longer for details	4.62	5.11	4.12	34.98	.00
I would use multimedia features	4.02	4.39	3.63	24.77	.00
I would use search engine	4.14	4.57	3.68	32.46	.00
Human-Human Interactivity	3.32	3.05	3.59	18.80	.00
I would participate customer discussions	3.26	2.62	3.93	71.60	.00
I would provide my feedback to the site	3.15	2.78	3.53	28.86	.00
I would contact the company	3.01	3.03	2.99	0.05	.82
I would sign in the site for information	3.85	3.80	3.90	0.38	.54

Since the two countries showed significant differences in Internet usage motivations and perceived interactivity, additional structural equation models were estimated to examine differences in causal relationships among the latent variables between the two countries (see Figure 6-3 and 6-4). In addition, standardized beta coefficients (β) of the three path diagrams are presented in Figure 6-5. Consistent with the results of ANOVA, the structural equation models of the two countries indicate different causal relationships from the Internet usage motivations to the perceived interactivity via the duration of time. However, the paths from the perceived interactivity to the advertising effectiveness measurements (attitude toward the site, attitude toward the brand, and purchase intention) were relatively similar between the two countries.

In terms of the relationship between the motivations and the duration of time, the Korean subjects showed a positive relationship between the information motivation and the duration of time. However, the American subjects did not indicate any significant relationship between the two constructs. With respect to the relationship between the motivations and the human-message interaction, the information motivation was the only motivation that showed a positive relationship with the human-message interaction in the United States, while the social interaction motivation was the only motivation that showed a positive relationship with this type of interactivity in Korea. On the other hand, both countries showed similar results in terms of the relationship between the motivations and the human-human interaction. For instance, the convenience and social interaction motivations showed the positive relationships with the human-human interaction, whereas the information and entertainment motivations showed the negative relationships with the human-human interaction in both countries.

Figure 6-3. Path diagram of the structural equation model in the United States
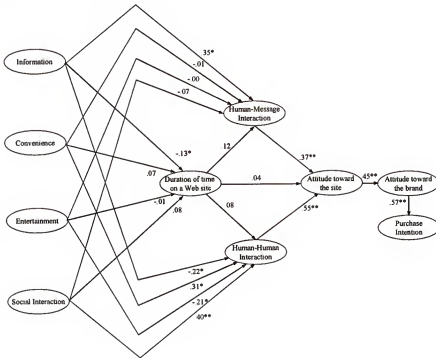
Figure 6-4. Path diagram of the structural equation model in Korea

Total / US / Korea

Information

Convenience

Entertainment

Social Interaction

Human-Message Interaction

Duration of time on a Web site

Human-Human Interaction

Attitude toward the site

Attitude toward the brand

Purchase Intention

.31* .35* .07
.04 -.01 -.04
.05 -.04 -.10
-.23** -.07 -.37*
.29** -.13* .52*
-.25* .07 -.3*
-.10 -.01 .02
.17* .08 -.11
-.01 -.22* -.25*
.19* .31* .27*
-.11 -.21* -.20*
.37* .40* .62**

-.01 -.12 .07
.03 .04 .01
.03 .08 .09

.39** .37** .42**
.56** .55** .49**

.52** .45* .60**
.53** .57** .65**

* P < .05 ** P < .01

Figure 6-5. Comparison of the three path diagrams

CHAPTER 7
DISCUSSION

This study should be viewed as a benchmark study for an empirical examination of the structural antecedents and consequences of perceived interactivity in the Internet usage context. Stewart and Ward (1994) argued that the continuing rapid evolution of media would present new opportunities for research that analyzes the ways in which individuals interact with and act upon new media in the context of advertising. Following from this focus, the main objective of this study was to investigate whether perceived interactivity can be explained by motivations for using the Internet (i.e., antecedents) and whether this construct also can determine the consequences of interactive advertising variables: attitude toward the site, attitude toward the brand, and purchase intention. In addition, this study was also considered an attempt to find differences in these major elements of interactive advertising among different cultures and different involvement conditions. For these objectives, the uses and gratifications theory was applied as a main theoretical framework in its application toward global interactive advertising.

As new communication technologies rapidly materialize, the flexibility of this theory was very useful in understanding individual's motivations to use a computer-mediated communication medium (Ruggiero 2000). Rayburn (1996) also said that the uses and gratifications theory has successfully integrated with other theories and advances in multivariate data analysis to position itself as a major area of theoretical study for new media, especially computer-mediated communications. Building on recent

applications of the uses and gratifications theory, this study suggests ways in which the relationship between motives for media uses and media effects might be clarified theoretically and empirically. With this in mind, structural equation modeling of this study identified major constructs in motivations for using the Internet and then confirmed their effects on other major constructs in interactive advertising. The present study also provides broad perspectives about perceived interactivity, serving as antecedents to affect interactive advertising effectiveness, as well as examples to reveal the limitations of operationalizing interactivity on a marketing Web site.

The present study replicates the findings of previous research in several aspects. First, this study's dimensions of major constructs, derived from the measurement model, closely mirrored that found in previous studies. Specifically, the measurement model identified the dimensions of Internet usage motivations, perceived interactivity, and advertising effectiveness measurements. Second, this study also hypothesized causal relationships among the key constructs of interactive advertising based on prior attitude toward the ad research, as well as uses and gratifications research. Finally, this study showed that people from different cultural backgrounds would act differently under online circumstance based on prior cross-cultural advertising research. There were two unresolved issues in this study as well. One was the nonsignificant effects of the duration of time on perceived interactivity, and the other was another nonsignificant result as to the differences in perceived interactivity between high and low involvement conditions. More detailed interpretations regarding each finding are discussed in the following overview of research hypotheses of this study

Overview of the Research Questions and Hypotheses

In this section, each of the six research hypotheses and two research questions is evaluated based on the main experiments, conducted in the United States and Korea.

H1: The motivations for using the Internet will have a significant effect on the duration of time on a Web site.

Hypothesis 1 predicted the effects of Internet usage motivations on the duration of time. As a preliminary step, the measurement model identified the four primary motivations for using the Internet (information, convenience, entertainment, and social interaction motivations). These four dimensions of Internet usage motivations were consistent with the findings of previous studies of Internet usage (Kaye and Johnson 2001; Korgaonkar and Wolin 1999; Papacharissi and Rubin 2000). The findings indicated that three Internet usage motivations (information, convenience, and social interaction motivations) have significant direct effects in predicting the duration of time on a Web site, as well as the two types of perceived interactivity, human-message interaction and human-human interaction. That means consumers' behavior at the site may be affected by certain motivations for using the Internet.

This result was consistent with the findings of previous research that audience's responses to media are affected by motivations (Luo 2002; MacInnis and Jaworski 1989; Rayburn and Palmgreen 1984). From the uses and gratifications perspective, this hypothesis viewed audiences' media consumption patterns as intended actions. That means this result is also considered evidence of an active audience in the uses and gratifications theory because subjects seemed to control the messages on the Web in order to shape media content in ways that serve their motivations or desires for particular kinds of gratifications (Swanson 1987).

H2: The duration of time on a Web site will have a significantly positive effect on the perceived interactivity.

Hypothesis 2 predicted that perceived interactivity would be affected by the duration of time on a Web site. With respect to the scales used in this analysis, the two types of perceived interactivity (human-message interaction and human-human interaction), derived from the measurement model, were also consistent with previous research (Cho and Leckenby 1999). Regarding the causal relationship between the two constructs, Hoffman and Novak (1996) argued that duration of time contributes to a higher degree of interactivity on a Web site. Therefore, it was expected that the longer a subject stayed at a Web site, the more the subject would use several interactive functions at the site. However, there was no significant effect of the duration of time on either type of perceived interactivity. Instead, Internet usage motivations had a stronger influence on the perceived interactivity than did the duration of time.

Since Ferguson and Perse (2000) argued that Internet usage motivations would predict behavioral aspects of Internet users, it is assumed that Internet usage motivations, instead of the duration of time, accounted for most of the variation of interactivity. In addition, the insignificant effect of the duration of time also might be affected by the artificial condition in this experiment. Even though subjects were allowed to view the site for as long as they needed, a lab setting with supervision might make them feel more time pressure to complete the assignment as early as possible. Therefore, the duration of time may not be as strong a behavioral indicator as it appears to be in the natural setting. As Cho and Leckenby (1999) suggested, observation of actual interactivity behavior, such as clicking hyperlinks or log file analysis, may better present actual behavioral measures.

*H3: A higher level of perceived interactivity will have a significantly
positive effect on the measures of advertising effectiveness.*

Hypothesis 3 stated that perceived interactivity would be a significant predictor of the advertising effectiveness measurements. The measurement model also replicated the findings of previous ad attitude research by providing the three dimensions of advertising effectiveness measurements: attitude toward the site, attitude toward the brand, and purchase intention. As in previous studies that argued that the interactivity on a marketing Web site would lead to a more positive attitude and higher purchase intention (Cho and Leckenby 1999; Coyle and Thorson 2001; Pavlou and Stewart 2000), it was shown that all three measurements of advertising effectiveness were significantly affected by both types of interactivity. That means audiences who show a higher level of interactivity with a Web site are more likely to have positive attitude toward the site and possibly higher purchase intention. For advertisers, this result suggests that the more interactive options available at a marketing Web site, the better it will be liked.

Based on the effects of perceived interactivity on the advertising measurements, it is also assumed that the role of consumers in selecting advertising messages, in choosing when and how to interact, and the goals of consumers involved in the interactivity are especially important dimensions of interactive advertising. In other words, an active audience should be the focal point for understanding the effectiveness of interactive advertising because the actual realm of interactivity on a Web site is only caused by physical actions and reactions of audiences (Heeter 2000). Therefore, audiences' use of various interactive options on a Web site should be construed as an important indicator in understanding how and why consumers respond as they do to interactive advertising (Pavlou and Stewart 2000).

H4-1: A higher level of positive attitude toward the site will have a directly positive effect on the attitude toward the brand.

H4-2: A higher level of positive attitude toward the brand will have a directly positive effect on the purchase intention.

Hypothesis 4-1 and hypothesis 4-2 predicted that the traditional advertising outcome measures (attitude toward the ad, attitude toward the brand, and purchase intention) could be applied to interactive advertising effectiveness. The concept of attitude toward the ad has been considered a significant antecedent of attitude toward the brand and purchase intention (Miniard, Bhatla, and Rose 1990). Given the robustness of attitude toward the ad in traditional advertising media, this study showed the robustness of attitude toward the site that also affects attitude toward brand and purchase intention. As suggested by Chen and Wells (1999), this result suggests that attitude toward the site can be considered parallel to attitude toward the ad. In other words, the previous empirical findings of attitude toward the ad, which showed its robustness across various types of advertising medium, also can be applied to explaining interactive advertising effectiveness with the concepts of attitude toward the site. On the other hand, attitude toward the brand also had a strong effect on purchase intention. Considering that attitudes are considered relatively stable and enduring predispositions to behave in the context of advertising effectiveness, an individual's internal evaluation of a Web site may play a similar role in the context of computer-mediated communication. Therefore, it is expected that when a consumer perceives pleasant or likeable feeling toward a Web site while surfing through the site, this would enhance chances that they are likely to have more positive attitudes toward the advertised brand on the site and purchase the brand in the future.

H5-1: People in a high involvement condition will stay longer on a marketing Web site than those in a low involvement condition.

H5-2: People in a high involvement condition will engage in a higher level of perceived human-message interactivity than those in a low involvement condition.

H5-3: People in a high involvement condition will engage in a higher level of perceived human-human interactivity than those in a low involvement condition.

The fifth set of hypotheses provided mixed results. While there were differences between subjects in a high involvement situation and subjects in a low involvement situation in terms of the manipulation check and the duration of time on a Web site, there was no difference in perceived interactivity between the two groups. As expected, the high involvement subjects appeared to spend more time on the site and perceive a higher level of involvement about the products on the site. Contrary to the expectation, both groups of subjects indicated statistically no difference in perceived interactivity even though the high involvement subjects showed a higher level of perceived interactivity.

As an explanation of this result, Mitchell and Olson (1981) suggested a possible confounding effect caused by the artificial exposure environment. In this experiment, subjects in a high involvement situation were asked to find a color inkjet printer, while subjects in a low involvement situation were asked to evaluate visual elements of the site. Considering the given involvement situations, it was assumed that the low involvement subjects might be influenced by their assignment in the experiment. Even though they did not spend much time on a Web site or were not concerned as much about the product on the site for the given assignment, they might perceive a high degree of interactivity in the process of evaluating visual elements. This may account for the nonsignificant differences in perceived interactivity between the two perceived involvement conditions.

H6: People from low and high context cultures will significantly differ on the level of perceived interactivity on a Web site.

Hypothesis 6 predicted that American subjects and Korean subjects would show different perceived interactivity based on their cultural backgrounds. As expected, there were significant differences in perceived interactivity between the two cultures. Taylor, Miracle, and Wilson (1997) suggested that the contextual differences lead to differences in communication practices. For instance, people from a high context culture often send more information implicitly, have a wider "network," and thus tend to stay well informed on many subjects, while people from low context cultures usually verbalize much more background information, and tend not to be well informed on subjects outside of their own information seeking process (Hall 1981).

Following from this theory, this study showed that the types of interactivity were considerably different between the two cultures. For instance, American subjects showed a higher level of perceived human-message interactivity on a Web site, whereas the Korean subjects indicated a higher level of perceived human-human interactivity at the site. That implies that the concept of cultural context also can be applied to Internet usage, which mainly involves an information search process. In the context of computer-mediated communication, low context interactivity on a Web site is similar to interacting with messages because people from a low context culture may rely on the information they directly find on the Internet. On the other hand, high context interactivity on a Web site is more similar to interacting with other people because people from a high context culture may put more emphasis on online bonds with other people and thus may trust the information they obtain from their online interpersonal communication, such as chat rooms or online forums.

RQ1: Are there significant differences among the Internet usage motivations in regard to the average duration of time on a marketing Web site?

Following from hypothesis 1, research question 1 examined the relative importance weights of the four Internet usage motivations on the duration of time. The results suggest that those who have higher needs for information or social interaction in using the Internet spend more time on a marketing Web site. While the Internet in general is used mostly to satisfy information needs (Flanagin and Metzger 2001), the results suggest that those who have higher needs for social interaction also spend more time on a marketing Web site.

However, the other two motivations (convenience and entertainment motivations) showed negative effects on the duration of time on the site. Given that a computer company's Web site was examined in this experiment, it is assumed that the entertainment or convenience motivations for using the Internet might have a negative effect on subjects' intention to find further information on the site. As Rubin (1984) noted, a person's type of media use can be predicted by the media usage orientations; the strong causal relationship between an information-oriented site and the information motivation could be an example of the instrumental pattern of Internet uses.

RQ2: Are there significant differences among the Internet usage motivations in regard to the level of perceived interactivity on a marketing Web site?

In research question 2, the effects of Internet usage motivations on perceived interactivity can be recognized by a strong relationship between the human-human interaction and the social interaction motivation, as well as between the human-message interaction and the information motivation. According to Cho and Leckenby (1999), the human-human interaction means a two-way flow of communication between senders and

receivers, while the human-message interaction refers to the extent to which people can choose and control the messages on a Web site. In other words, the social interaction motivation that means the need to communicate with other people on the Internet seemed to affect the human-human interaction on a marketing Web site through providing feedback or personal information to the advertiser or participating in a series of online discussions or forums with other consumers. On the other hand, it was shown that information-oriented Internet users tend to click a series of hyperlinks as a voluntary exposure to further information provided in the advertisers' Web site. Therefore, it is evident that there is a strong causal association between the information motivation and the human-message interactivity.

RQ3: What are the differences among the Internet usage motivations in terms of high and low context culture?

Following from hypothesis 6, research question 3 examined whether American subjects and Korean subjects would show different Internet usage motivations based on their cultural background. Consistent with previous cross-cultural advertising research, the cultural context was regarded as an efficient tool to explain differences in reactions to a marketing Web site between the two cultures. For instance, subjects from the low context culture had a higher degree of information and convenience motivation and perceived a higher degree of human-message interaction. On the other hand, subjects from the high context culture had a higher degree of social interaction motivation and human-human interaction. Considering that past cross-cultural advertising studies mainly examined traditional mass media in dealing with the effects of cultural contexts, this study provides an exploratory attempt to figure out the differences between the two cultural groups in the context of computer-mediated communication.

Implications and Limitations

Theoretical Implications

The researcher hopes that the current study contributes to both the academic and practical fields of mass communication. The results have a number of theoretical implications for numerous aspects of mass communication research. From a theoretical perspective, this study supports an application of the uses and gratifications theory to the Internet. Rubin (1994) said "The media uses and effects process is a complex one that requires careful attention to antecedent, mediating, and consequent conditions" (p.432). With this in mind, this study examined the media effects process by analyzing the causal relationships among motivations for using the Internet (i.e., antecedent variables), perceived interactivity (i.e., mediating variables), and advertising effectiveness measurements (i.e., consequent variables). Given the importance of motivations in the uses and gratifications perspectives, as well as the importance of interactivity in the context of computer-mediated communication, this study may help understand why and how people utilize a variety of interactive options on a Web site based on their needs.

In addition, this study supports the assumption of an active audience in the mass communication process. Even though Swanson (1979) criticized the fact that the uses and gratifications theory does not seek explicitly to investigate whether audiences are active when they select and use media, this study may offer the notion that interactivity can offer users the means to develop new ways of communication and greatly increase user activity. Regarding this matter, Fredin and David (1998) said that the Internet requires a higher level of audience activity (i.e., interactivity) because the audience is presented with a seemingly unending variety of options from which they must choose.

This study also examines whether the motivations for using the new media have been reconfigured, as communication technologies have evolved. Williams, Phillips, and Lum (1985) said that one of the major reasons for analyzing the new media is to examine whether gratifications change with new technologies. Consistent with earlier findings of uses and gratifications research, this study shows that basic motivations for using the media have not been changed by the advent of computer-mediated communication. For instance, the four dimensions of Internet usage motivations (information, convenience, entertainment, and social interaction), derived from this study, were consistent with the findings of previous uses and gratifications studies of the Internet and even traditional mass media. Therefore, this study supports the notion that motivations for using a certain mass medium transcend communication technologies or contexts (Flanagin and Metzger 2001).

Finally, this study provides an exploratory attempt to adopt an experimental method to identify cultural differences in motivational and behavioral aspects between two countries. From the cultural context perspective, this study shows that people from the high context culture had a higher degree of social interaction motivation and human-human interaction, whereas subjects from the low context culture had a higher degree of information and convenience motivation and perceived a higher degree of human-message interaction. Considering that high and low context refers to the amount of information that a person can comfortably manage (Keegan and Green 2000), this study supports the application of cultural context to developing a global interactive advertising model by identifying cultural difference and its impact on the effectiveness of a global Web site across cultures.

Practical Implications

The present study also contributes to the practical field of advertising, especially global interactive advertising. First, this study directly assesses whether incorporating interactive features into a Web site leads to a positive attitude toward the site, as well as a positive attitude toward the brand and purchase intention. Based on the results of the causal relationship, it is suggested that a Web site should customize their interactive features to the personal style and needs of particular consumers focusing on the human-human interaction. Since the effect of the human-human interaction on interactive advertising measurement is higher than that of the human-message interaction, it is expected that the paradigm of the Internet as an information source may shift to that of a virtual communication tool. Regarding this assumption, Roehm and Haugtvedt (1999) argued that a Web site should be developed to make visitors think they are actually having a conversation with the site. If the human-human interaction can enhance the mutual relationship between a company and its target consumers, this may also provide a means for relationship marketing with potential consumers all around the world.

Second, this study contributes to the practical field of advertising by verifying the role of attitude toward the site as a mediator of interactive advertising effectiveness. If attitude toward the site is indeed a strong determinant of attitude toward the brand and purchase intention, the results may provide advertisers an implication that this construct is parallel to attitude toward the ad in traditional media. Since attitude toward the ad has been construed as the foremost predictor of sales, online advertisers should identify important antecedents of attitude toward the site (i.e., the human-human interaction) that may lead to more satisfied visitors and repeated visits to the site.

Finally, considering that a marketing Web site is something of a mix between direct selling and traditional media advertising (Berthon, Pitt, and Watson 1996), the findings from the two different cultures may provide a pivotal implication for establishing online brand equity in the context of global interactive advertising. In other words, this study may help multinational advertisers develop a standardized brand image by an effective combination of content, graphics, and interactive functions throughout all of their Web sites for consumers across countries. On the other hand, this study also indicates that people from different cultures have different motivations for using the Internet and show different intentions of interactivity on a Web site. Therefore, online advertisers should take a mixed approach in terms of standardization and localization for developing a global marketing Web site. For example, online advertisers may emphasize information features on a Web site for markets in a low context culture, while they may generate consumers' interaction with the company or other consumes on another site for markets in a high context culture.

Limitations

As with any research that is hoped to contribute to both academic and practical fields of advertising, this study also has some limitations in its methodological approach. First, the forced exposure to a company's Web site in the lab might produce results that have little direct application to real world settings, where subjects are continually exposed to competing stimuli. As Lutz, MacKenzie, and Belch (1983) suggested, placing subjects in an experimental situation may simply lead them to a particular mode of response from the exposure to the site. Even though this study varied the involvement situation, with one group of the subjects being asked to find a printer and the other group

to evaluate the visual elements, the difference between the two situations was not statistically significant.

Second, following from the first limitation, this interactive advertising effectiveness research was based on only one computer company's Web site, in which the contents are mostly information oriented; this may limit generalizing the results to other types of Web sites. For instance, this may be a major reason that the entertainment motivation was not significant in the causal relationships. Therefore, exposure to other types of Web sites could yield different findings about the causal relationships among Internet usage motivations and perceived interactivity. On the other hand, there might exist confounding effects of using an actual brand due to the possible influence of subjects' prior brand knowledge, preferences, and usage experience even though prior brand attitudes were controlled in estimating the model.

Third, as one of the major weaknesses in academic research, the use of a homogeneous student sample might result in different effects from what would be found in the general population. Brown and Stayman (1990) showed that the use of student subjects in previous attitude research caused a biasing effect in terms of the causal relationship among the advertising effectiveness measurements. In addition, this particular demographic group may share common sets of needs, values, and attitudes regardless of their nationalities (Batra, Aaker, and Myer, 1995). Therefore, this should be considered as another limiting condition on the generalizability of the results.

Finally, some measurements of this study may have limitations in terms of validity. With respect to perceived interactivity and purchase intention, subjects' actual behavior in the future might be different from what they indicate on the basis of future

intention. In addition, self-report data may not be adequate to measure respondents'

motivational and behavioral aspects (Ruggiero 2000; Severin and Tankard 1997;

Swanson 1979). In addition, there might exist some differences between the two versions

of the Web sites and questionnaires (in Korean and English), although the questionnaire

was constructed through the translation and back-translation process, and the Web sites

were considered same across various features except for language.

Conclusion

In this new media environment, in which access to the Internet becomes as

convenient as television, it is critical to know why and how people use the Internet. As

the number of Web sites increases and people become more active online consumers, it is

important to understand how people utilize a variety of interactive options to have a

certain attitude toward a Web site or brand and to purchase a certain product on the

Internet. Furthermore, the Internet also allows audiences to visit a Web site from

anywhere at anytime. Therefore, it is also important to understand whether cultural

differences account for different motivations and behaviors for using the medium. Based

on a firm belief that this new medium provides unique opportunities to explore existing

theories in mass communication, this study may provide more insight by integrating the

uses and gratifications perspectives, empirical studies on advertising effectiveness, and

the cultural context.

For this purpose, the study provides a theoretical model of the relationships

among motivations for using the Internet, perceived interactivity on a Web site, and

interactive advertising effectiveness measurements. In this process, this study provided

the process through which general concepts become operationalized measurements in

terms of its convergent and discriminant validity. By analyzing a number of motives for

using the Internet and several types of interactivity, it was possible to observe some of the causal relationships between motivational and behavioral aspects of consumers, as well as differences in motivations and perceived interactivity between different cultures. Subsequently, the results of this study may help predict Web site effectiveness for Internet users based on their motivations and cultural backgrounds. This study also suggests that Web sites for global audiences should consider an effective mix of Internet users' motivational factors and interactive features of the site in their dealings with visitors from various cultural backgrounds.

Future research can extend the findings of this study in several directions. First, suggestions for future research should include actual behavioral measures on the Internet. Sophisticated evaluation tools of Web sites will allow researchers and marketers to observe actual interactivity on the Internet. Considering that the experience of interactivity was not used in this study, future research adopting actual interactivity may produce different results from this study, in which future intention of interactivity was used as a mediating variable.

Second, uses of different types of Web sites and different populations are also needed to generalize the results of this study. A more comprehensive study may gather data from a probabilistic sample of Internet users. In this process, it might be also useful to examine gender differences in motivations and perceived interactivity because this study used a computer company's Web site, which is considered to be a male-oriented site.

Third, in addition to cultural context, future studies may examine other cultural dimensions, such as masculinity or uncertainty avoidance, in the context of computer-mediated communication.

Fourth, even though this study suggest that individuals do make conscious choices about what they see and read on the Internet, future studies should continuously examine the assumption of an active audience in the mass communication process. In this process, interactivity may offer clues to the understanding about choice, reception, and response of the active audience.

Finally, given the effectiveness of the uses and gratifications theory in understanding new media, future research is needed to explore its applications in more specific features of the Internet, such as virtual community or Internet broadcasts. Considering the ever-changing nature of the Internet, it is hoped that the results of this study will be useful, in this new and evolving field of mass communication, in understanding why and how people use the Internet.

Thank you for taking the time to answer the questions in this survey.
I am currently conducting a study about students' opinion toward Internet usage.
Your answers will be used only for a statistical purpose and remain strictly confidential.
Before starting, please read the instructions provided at the beginning of each section.

Section 1.
(Please answer the following questions either by putting a check or a number in the space provided)

Q1-1. How many hours do you usually spend surfing the Internet on an average weekday? _____ hour(s) _____ minutes

Q1-2. How many hours do you usually spend surfing the Internet on an average weekend day? _____ hour(s) _____ minutes

Q1-3. Please indicate how much you agree with each statement about the reasons for using the Internet. If you think the provided statement exactly describes what you agree, please check "7" in the box. If you think the provided statement describe what you strongly disagree, please check "1" in the box.

Statement	7	6	5	4	3	2	1
01. Because I can learn about things that I haven't known	7	6	5	4	3	2	1
02. To pass time when bored	7	6	5	4	3	2	1
03. Because I wonder what other people said on the Internet	7	6	5	4	3	2	1
04. To keep up with what's going on in the world	7	6	5	4	3	2	1
05. Because it is easier to use than other media	7	6	5	4	3	2	1
06. Because it's a habit, just something I do	7	6	5	4	3	2	1
07. To learn about things that are useful	7	6	5	4	3	2	1
08. To express myself freely	7	6	5	4	3	2	1
09. Because it is convenient to use	7	6	5	4	3	2	1
10. Because I just like to surf the Internet	7	6	5	4	3	2	1
11. Because it is enjoyable	7	6	5	4	3	2	1
12. Because it is a good way to do research	7	6	5	4	3	2	1
13. Because I can talk with people who share with my interest	7	6	5	4	3	2	1

14. Because I can use the Internet at anytime from anywhere	7	6	5	4	3	2	1
15. Because it is entertaining	7	6	5	4	3	2	1
16. Because I can get what I want for less effort on the Internet	7	6	5	4	3	2	1

Section 2.
Q2-1. Have you purchased any product or service <u>on the Internet for past 12 months</u>?
     1) Yes **(Please go to Q2-2.)**   2) No **(Please go to Q2-3.)**

Q2-2. **(Only for the respondents who said, "YES" in Q2-1.)** How many products or services have you purchased on the Internet for past 12 months? (Please write down a number) _____ products/services

Q2-3. **(For all the respondents)**
Have you visited any of the following six WEB SITES for past 12 months?
Please answer <u>whether you have visited the following Web sites</u> by putting a check as "Yes or No" in the box.

I have visited the ... site in the past 12 months.	*Please check one.	
01. Motorola (www.motorola.com)	Yes	No
02. IBM (www.ibm.com)	Yes	No
03. Hewlett-Packard (www.hp.com)	Yes	No
04. Sony (www.sony.com)	Yes	No
05. Canon (www.canon.com)	Yes	No
06. Samsung (www.samsung.com)	Yes	No

Q2-4. **(For all the respondents)**
What do you feel about each of the following six BRANDS?
Please answer <u>your feeling about the following brands</u> by putting a check in the number provided between 1 and 9.

01. Canon	Good	9	8	7	6	5	4	3	2	1	Bad
02. HP	Good	9	8	7	6	5	4	3	2	1	Bad
03. Motorola	Good	9	8	7	6	5	4	3	2	1	Bad
04. Samsung	Good	9	8	7	6	5	4	3	2	1	Bad
05. IBM	Good	9	8	7	6	5	4	3	2	1	Bad
06. Sony	Good	9	8	7	6	5	4	3	2	1	Bad

Section 3.
Please follow the FIVE STEPS before going to the next page.

Step 1: Please read carefully the following statement and assume it as your situation.
- Suppose that you are working as a student staff in your department, and your department chair asked you to find a color inkjet printer from the HP (Hewlett-Packard) Web site with a limited budget.
- Based on your suggested model, the department will purchase a total of 30 inkjet printers in the future.
- Your task is to find an ideal color inkjet printer model at the HP Web site (www.hp.com) and then provide 1) the model name and 2) reasons for your selection in the end.

Step 2. Please read carefully the following three directions for your task.
- You are not allowed to visit any other site, such as competitors' or shopping agent sites, as you surf through the HP site to find a color inkjet printer model.
- You may use whatever navigation methods or links within the HP site to provide your rationales for the model.
- There is no time limit for this task.

Step 3. When you fully understand the above steps, please make sure that your computer is at "log-on" and write down the current time, which is shown at the right bottom on the screen.

- Current Time: _____:_____

Step 4. Once you have written down the current time, please go to "www.hp.com" and execute your assigned task at the site. Please make sure that your task is to find a color inkjet printer for your department.

Step 5. After completing the assigned task, please write down 1) the current time, again, 2) the suggested model, and 3) the best reason for your selection, and then go to the next page.

- Current Time: _____:_____
- Suggested HP Color Inkjet Printer Model: HP _____
- Why did you select this model? (Please briefly explain.)
  _____

Section 4.
Q4-1. Approximately, <u>how many links did you visit</u> at the HP Web site?
Please write down the number of links you visited at the HP site: _____ links

Q4-2. Please indicate how much you agree with each statement about <u>your experience at</u>
<u>the HP site</u>.
If you <u>strongly agree</u> with the provided statement, *please check "7" in the box.*
If you <u>strongly disagree</u> with the provided statement, *please check "1" in the box.*

Statement	7	6	5	4	3	2	1
01. This site seems to provide a variety of message contents.	7	6	5	4	3	2	1
02. This site facilitates use of search engine.	7	6	5	4	3	2	1
03. This site enables interpersonal communication with visitors.	7	6	5	4	3	2	1
04. I think I fully consumed multimedia features at the site.	7	6	5	4	3	2	1
05. I feel like I talked with a sales person of the company.	7	6	5	4	3	2	1
06. I have a great deal of control over choosing links at the site.	7	6	5	4	3	2	1
07. This site is designed primarily to answer my questions.	7	6	5	4	3	2	1
08. In this site, I got the sense that I was reading a print ad.	7	6	5	4	3	2	1
09. It was necessary to participate in HP customer discussion.	7	6	5	4	3	2	1
10. This site facilitates to contact HP by phone or email.	7	6	5	4	3	2	1

Q4-3. The following questions suppose that you will visit the HP Web site in the future.
<u>Regardless of what you did while visiting the HP site</u>, please indicate <u>your future</u>
<u>intention</u> at the HP site.

Statement	7	6	5	4	3	2	1
01. I would participate in HP customer discussion groups.	7	6	5	4	3	2	1
02. I would stay in the HP site for a while to look at the details.	7	6	5	4	3	2	1
03. I would sign in the HP site to get further information.	7	6	5	4	3	2	1
04. I would use search engine for additional information.	7	6	5	4	3	2	1
05. I would provide my feedback to the HP site.	7	6	5	4	3	2	1
06. I would use multimedia features in addition to reading texts.	7	6	5	4	3	2	1
07. I would contact HP by phone or email if necessary.	7	6	5	4	3	2	1
08. I would click into deeper links to see more information.	7	6	5	4	3	2	1

Section 5.

Q5-1. Please indicate how much you agree with each of the following statements about the HP Web site.

If you <u>strongly agree</u> with the provided statement, *please check "7" in the box.*

If you <u>strongly disagree</u> with the provided statement, *please check "1" in the box.*

01. This site builds a relationship with the company.	7	6	5	4	3	2	1
02. I would like to visit this website again in the future.	7	6	5	4	3	2	1
03. I am satisfied with the service provided by this website.	7	6	5	4	3	2	1
04. I feel comfortable in surfing this website.	7	6	5	4	3	2	1
05. Surfing this website is a good way for me to spend my time.	7	6	5	4	3	2	1
06. I would rate this site as one of the best.	7	6	5	4	3	2	1

Q5-2. Please indicate <u>your feeling toward HP</u> as a brand by putting a check in the space provided (Please check one).

Good	7	6	5	4	3	2	1	Bad
Unpleasant	1	2	3	4	5	6	7	Pleasant
Favorable	7	6	5	4	3	2	1	Unfavorable

Q5-3. How likely would it be for you <u>to purchase a product from the HP site in the future</u>? (Please check one).

Likely	7	6	5	4	3	2	1	Unlikely
Probable	7	6	5	4	3	2	1	Improbable
Impossible	1	2	3	4	5	6	7	Possible

Section 6.

Thanks for your cooperation up to this section. There are only a few questions left. The following questions are asked <u>to remind your given task while visiting the HP site</u>.

Q6-1. What was <u>your major task</u> while visiting the HP site? (Please check one)

1) To find an ideal color inkjet printer model with appropriate rationale at the HP site

2) To simply browse the HP Web site and evaluate its visual elements

3) I don't know.

Q6-2. For the major task you just answered in Q6-1, how much did you care about selecting a product while surfing through the HP Web site? (Please check one):

I would care a great deal	7	6	5	4	3	2	1	I would not care at all

Q6-3. For the major task you just answered in Q6-1, how important was it for you to make a right choice of product while surfing through the HP site? (Please check one)

Not at all important	1	2	3	4	5	6	7	Extremely important

Q6-4. For the major task you just answered in Q6-1, how concerned were you about the understanding of the HP products while surfing through the HP site? (Please check one)

Very much concerned	7	6	5	4	3	2	1	Not at all concerned

Section 7.

The following questions are asked to place you into sub-groups for this study. Your answers will be used only for a statistical purpose and will remain completely confidential.

Q7-1. Gender   1) Male   2) Female

Q7-2. In what year were you born? 19 ____

Q7-3. What is your current level of education?   1) 1st year college student
                                                       2) 2nd year college student
                                                       3) 3rd year college student
                                                       4) 4th year college student
                                                       5) Graduate student
                                                       6) Others (please specify)

- THANK YOU VERY MUCH FOR YOUR PARTICIPATION! -

EXPERIMENT QUESTIONNAIRE (LOW INVOLVEMENT)

Thank you for taking the time to answer the questions in this survey.
I am currently conducting a study about students' opinion toward Internet usage.
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Before starting, please read the instructions provided at the beginning of each section.

Section 1.
(Please answer the following questions either by putting a check or a number in the space provided)

Q1-1. How many hours do you usually spend surfing the Internet on an average weekday? ____ hour(s) ____ minutes

Q1-2. How many hours do you usually spend surfing the Internet on an average weekend day? ____ hour(s) ____ minutes

Q1-3. Please indicate how much you agree with each statement about the reasons for using the Internet. If you think the provided statement exactly describes what you agree, please check "7" in the box. If you think the provided statement describe what you strongly disagree, please check "1" in the box.

Statement	7	6	5	4	3	2	1
01. Because I can learn about things that I haven't known	7	6	5	4	3	2	1
02. To pass time when bored	7	6	5	4	3	2	1
03. Because I wonder what other people said on the Internet	7	6	5	4	3	2	1
04. To keep up with what's going on in the world	7	6	5	4	3	2	1
05. Because it is easier to use than other media	7	6	5	4	3	2	1
06. Because it's a habit, just something I do	7	6	5	4	3	2	1
07. To learn about things that are useful	7	6	5	4	3	2	1
08. To express myself freely	7	6	5	4	3	2	1
09. Because it is convenient to use	7	6	5	4	3	2	1
10. Because I just like to surf the Internet	7	6	5	4	3	2	1
11. Because it is enjoyable	7	6	5	4	3	2	1
12. Because it is a good way to do research	7	6	5	4	3	2	1
13. Because I can talk with people who share with my interest	7	6	5	4	3	2	1

14. Because I can use the Internet at anytime from anywhere	7	6	5	4	3	2	1
15. Because it is entertaining	7	6	5	4	3	2	1
16. Because I can get what I want for less effort on the Internet	7	6	5	4	3	2	1

Section 2.
Q2-1. Have you purchased any product or service <u>on the Internet for past 12 months?</u>
    1) Yes **(Please go to Q2-2.)**   2) No **(Please go to Q2-3.)**

Q2-2. **(Only for the respondents who said, "YES" in Q2-1.)** How many products or services have you purchased on the Internet for past 12 months? (Please write down a number) _____ products/services

Q2-3. **(For all the respondents)**
Have you visited any of the following six WEB SITES for past 12 months?
Please answer <u>whether you have visited the following Web sites</u> by putting a check as "Yes or No" in the box.

"I have visited the ... site in the past 12 months."	*Please check one.*	
01. Motorola (www.motorola.com)	Yes	No
02. IBM (www.ibm.com)	Yes	No
03. Hewlett-Packard (www.hp.com)	Yes	No
04. Sony (www.sony.com)	Yes	No
05. Canon (www.canon.com)	Yes	No
06. Samsung (www.samsung.com)	Yes	No

Q2-4. **(For all the respondents)**
What do you feel about each of the following six BRANDS?
Please answer <u>your feeling about the following brands</u> by putting a check in the number provided between 1 and 9.

01. Canon	Good	9	8	7	6	5	4	3	2	1	Bad
02. HP	Good	9	8	7	6	5	4	3	2	1	Bad
03. Motorola	Good	9	8	7	6	5	4	3	2	1	Bad
04. Samsung	Good	9	8	7	6	5	4	3	2	1	Bad
05. IBM	Good	9	8	7	6	5	4	3	2	1	Bad
06. Sony	Good	9	8	7	6	5	4	3	2	1	Bad

Section 3.
Please follow the FIVE STEPS before going to the next page.

Step 1: Please read carefully the following statement and assume it as your situation.
- The purpose of this research is to investigate methods of using visual elements on a corporate Web site.
- Your task is to visit the HP Web site (www.hp.com) and simply to examine the visual elements, such as picture, color, and design, on the site.
- As you surf through the site, please remember this research is interested in your evaluation of the visual elements of the HP site, not in your evaluation of the HP products.

Step 2. Please read carefully the following three directions for your task.
- As you surf through the site, please remember you are not allowed to visit any other site but the HP site.
- You may use whatever navigation methods or links within the HP site to develop your evaluation of the visual elements.
- There is no time limit for this task.

Step 3. When you fully understand the above steps, please make sure that your computer is at "log-on" and <u>write down the current time</u>, which is shown at the right bottom on the screen.

- Current Time: ____:_____

Step 4. Once you have written down the current time, please go to "www.hp.com" and execute your assigned task at the site. Please make sure that <u>your task is to browse the HP Web site for the evaluation of the visual elements</u>.

Step 5. After completing the assigned task, please write down the current time again and then go to the next page.

- Current Time: ____:_____

Section 4.

Q4-1. Approximately, <u>how many links did you visit</u> at the HP Web site?
Please write down the number of links you visited at the HP site: _____ links

Q4-2. Please indicate how much you agree with each statement about <u>your experience at the HP site</u>.
If you <u>strongly agree</u> with the provided statement, *please check "7" in the box*.
If you <u>strongly disagree</u> with the provided statement, *please check "1" in the box*.

Statement	7	6	5	4	3	2	1
01. This site seems to provide a variety of message contents.	7	6	5	4	3	2	1
02. This site facilitates use of search engine.	7	6	5	4	3	2	1
03. This site enables interpersonal communication with visitors.	7	6	5	4	3	2	1
04. I think I fully consumed multimedia features at the site.	7	6	5	4	3	2	1
05. I feel like I talked with a sales person of the company.	7	6	5	4	3	2	1
06. I have a great deal of control over choosing links at the site.	7	6	5	4	3	2	1
07. This site is designed primarily to answer my questions.	7	6	5	4	3	2	1
08. In this site, I got the sense that I was reading a print ad.	7	6	5	4	3	2	1
09. It was necessary to participate in HP customer discussion.	7	6	5	4	3	2	1
10. This site facilitates to contact HP by phone or email.	7	6	5	4	3	2	1

Q4-3. The following questions suppose that you will visit the HP Web site in the future. <u>Regardless of what you did while visiting the HP site</u>, please indicate <u>your future intention</u> at the HP site.

Statement	7	6	5	4	3	2	1
01. I would participate in HP customer discussion groups.	7	6	5	4	3	2	1
02. I would stay in the HP site for a while to look at the details.	7	6	5	4	3	2	1
03. I would sign in the HP site to get further information.	7	6	5	4	3	2	1
04. I would use search engine for additional information.	7	6	5	4	3	2	1
05. I would provide my feedback to the HP site.	7	6	5	4	3	2	1
06. I would use multimedia features in addition to reading texts.	7	6	5	4	3	2	1
07. I would contact HP by phone or email if necessary.	7	6	5	4	3	2	1
08. I would click into deeper links to see more information.	7	6	5	4	3	2	1

Section 5.
Q5-1. Please indicate how much you agree with each of the following statements about the HP Web site.
If you strongly agree with the provided statement, *please check "7" in the box.*
If you strongly disagree with the provided statement, *please check "1" in the box.*

01. This site builds a relationship with the company.

7	6	5	4	3	2	1

02. I would like to visit this website again in the future.

7	6	5	4	3	2	1

03. I am satisfied with the service provided by this website.

7	6	5	4	3	2	1

04. I feel comfortable in surfing this website.

7	6	5	4	3	2	1

05. Surfing this website is a good way for me to spend my time.

7	6	5	4	3	2	1

06. I would rate this site as one of the best.

7	6	5	4	3	2	1

Q5-2. Please indicate your feeling toward HP as a brand by putting a check in the space provided (Please check one).

Good	7	6	5	4	3	2	1	Bad
Unpleasant	1	2	3	4	5	6	7	Pleasant
Favorable	7	6	5	4	3	2	1	Unfavorable

Q5-3. How likely would it be for you to purchase a product from the HP site in the future? (Please check one).

Likely	7	6	5	4	3	2	1	Unlikely
Probable	7	6	5	4	3	2	1	Improbable
Impossible	1	2	3	4	5	6	7	Possible

Section 6.
Thanks for your cooperation up to this section. There are only a few questions left.
The following questions are asked to remind your given task while visiting the HP site.

Q6-1. What was your major task while visiting the HP site? (Please check one)
1) To find an ideal color inkjet printer model with appropriate rationale at the HP site
2) To simply browse the HP Web site and evaluate its visual elements
3) I don't know.

Q6-2. For the major task you just answered in Q6-1, how much did you care about selecting a product while surfing through the HP Web site? (Please check one):

I would care a great deal	7	6	5	4	3	2	1	I would not care at all

Q6-3. For the major task you just answered in Q6-1, how important was it for you to make a right choice of product while surfing through the HP site? (Please check one)

Not at all important	1	2	3	4	5	6	7	Extremely important

Q6-4. For the major task you just answered in Q6-1, how concerned were you about the understanding of the HP products while surfing through the HP site? (Please check one)

Very much concerned	7	6	5	4	3	2	1	Not at all concerned

Section 7.

The following questions are asked to place you into sub-groups for this study. Your answers will be used only for a statistical purpose and will remain completely confidential.

Q7-1. Gender   1) Male   2) Female

Q7-2. In what year were you born? 19 ____

Q7-3. What is your current level of education?
            1) 1st year college student
            2) 2nd year college student
            3) 3rd year college student
            4) 4th year college student
            5) Graduate student
            6) Others (please specify)

- THANK YOU VERY MUCH FOR YOUR PARTICIPATION! -

```
                              DATE: 10/24/2002
                              TIME: 10:12


                            L I S R E L  8.50

                                    BY

                       Karl G. Jöreskog & Dag Sörbom



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 Measurement Model #3
 Observed Variables
 learn passtime otherppl useful freeexps convenit justlike
 enjoyabl research meettalk useany entertng lessefft
 duration
 signinhp phonmail usesrch
 feedback usemulti staylong deeplink
 buildhp again spndtime bestsite
 goodbad pleasant favorabl
 likely probable

 Correlation Matrix from file E:cortotl2.txt

 Sample Size 385
 latent variables
 infomtv convemtv entermtv sointmtv lduratn
 hmint hhint attsite atthp purchsei
 equations
 useful learn research=infomtv
 convenit lessefft useany=convemtv
 entertng enjoyabl justlike passtime=entermtv
 otherppl freeexps meettalk=sointmtv
 duration=1*lduratn
 deeplink staylong usemulti usesrch=hmint
 feedback phonmail signinhp=hhint
 buildhp again spndtime bestsite=attsite
 goodbad pleasant favorabl=atthp
 likely probable=purchsei
 let the error for useful and learn correlate
 let the error variance of duration be 0
 LISREL output: rs mi
 Options ad=off
```

End of problem

Sample Size = 385

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Correlation Matrix

	learn	passtime	otherppl	useful	freeexps	convenit
learn	1.00					
passtime	0.10	1.00				
otherppl	0.14	0.19	1.00			
useful	0.51	0.13	0.16	1.00		
freeexps	0.12	0.10	0.56	0.18	1.00	
convenit	0.20	0.20	-0.10	0.23	0.00	1.00
justlike	0.14	0.35	0.10	0.19	0.21	0.22
enjoyabl	0.18	0.39	0.14	0.25	0.20	0.31
research	0.32	0.15	-0.06	0.36	-0.06	0.37
meettalk	0.07	0.12	0.49	0.02	0.55	-0.05
useany	0.11	0.07	-0.07	0.09	0.01	0.39
entertng	0.23	0.43	-0.01	0.26	0.26	0.22
lessefft	0.25	0.12	-0.01	0.26	0.06	0.42
duration	0.09	-0.04	0.16	0.03	0.08	-0.06
signinhp	0.10	0.03	0.07	0.08	0.18	0.06
phonmail	0.11	-0.03	0.07	0.04	0.19	0.07
usesrch	0.14	-0.01	-0.16	0.02	-0.02	0.12
feedback	0.13	0.03	0.28	0.07	0.34	-0.06
usemulti	0.16	0.01	-0.15	0.06	-0.03	0.09
staylong	0.15	0.13	-0.13	0.13	-0.07	0.16
deeplink	0.20	0.09	-0.14	0.14	-0.12	0.17
buildhp	0.14	0.01	0.12	0.09	0.11	0.00
again	0.17	0.02	0.02	0.15	0.10	0.11
spndtime	0.13	-0.01	0.10	0.10	0.17	0.04
bestsite	0.03	-0.09	-0.07	0.07	-0.02	0.08
goodbad	0.17	0.08	-0.15	0.10	-0.08	0.21
pleasant	0.14	0.04	-0.16	0.11	-0.12	0.20
favorabl	0.23	0.07	-0.14	0.16	0.16	0.22
likely	0.08	0.00	0.06	0.14	0.16	0.13
probable	0.13	0.06	0.10	0.16	0.19	0.17

Correlation Matrix

	justlike	enjoyabl	research	meettalk	useany	entertng
justlike	1.00					
enjoyabl	0.43	1.00				
research	0.13	0.28	1.00			
meettalk	0.17	0.27	0.00	1.00		
useany	0.18	0.14	0.27	0.11	1.00	
entertng	0.43	0.66	0.25	0.34	0.25	1.00
lessefft	0.15	0.32	0.38	0.08	0.28	0.34
duration	-0.02	-0.02	0.03	0.09	-0.09	-0.01
signinhp	0.06	0.05	0.04	0.16	0.09	0.08
phonmail	0.08	0.06	-0.02	0.14	0.07	0.10
usesrch	0.04	0.04	0.15	-0.04	0.14	0.02
feedback	-0.01	0.06	-0.08	0.27	-0.01	0.08
usemulti	0.02	0.04	0.09	-0.01	0.15	0.10
staylong	0.02	0.11	0.18	-0.10	0.12	0.12
deeplink	0.03	0.08	0.19	-0.18	0.09	0.07
buildhp	-0.01	0.00	0.06	0.14	-0.02	0.02
again	0.03	0.08	0.12	0.11	0.05	0.12
spndtime	0.10	0.21	0.06	0.16	0.07	0.20
bestsite	0.00	0.04	0.09	-0.03	0.13	0.05
goodbad	0.15	0.13	0.14	0.00	0.16	0.10
pleasant	0.09	0.08	0.12	-0.09	0.16	0.02
favorabl	0.13	0.14	0.18	0.01	0.09	0.10
likely	0.09	0.02	0.03	0.09	-0.02	0.04
probable	0.09	0.06	0.07	0.16	0.05	0.08

Correlation Matrix

	lessefft	duration	signinhp	phonmail	usesrch	feedback
	--------	--------	--------	--------	--------	--------
lessefft	1.00					
duration	-0.02	1.00				
signinhp	0.06	- -	1.00			
phonmail	0.07	0.06	0.58	1.00		
usesrch	0.09	0.06	0.37	0.36	1.00	
feedback	0.01	0.13	0.42	0.46	0.25	1.00
usemulti	0.08	0.03	0.29	0.25	0.48	0.37
staylong	0.11	-0.06	0.24	0.21	0.35	0.22
deeplink	0.12	-0.09	0.36	0.29	0.44	0.23
buildhp	0.03	0.05	0.43	0.39	0.28	0.39
again	0.10	0.04	0.53	0.56	0.42	0.38
spndtime	0.16	0.03	0.39	0.47	0.31	0.34
bestsite	0.14	0.06	0.29	0.34	0.25	0.19
goodbad	0.14	0.01	0.22	0.25	0.27	0.00
pleasant	0.04	- -	0.17	0.17	0.24	0.02
favorabl	0.14	0.06	0.25	0.24	0.18	0.06
likely	0.10	0.09	0.27	0.29	0.14	0.18
probable	0.13	0.06	0.30	0.27	0.14	0.20

Correlation Matrix

	usemulti	staylong	deeplink	buildhp	again	spndtime
	--------	--------	--------	--------	--------	--------
usemulti	1.00					
staylong	0.50	1.00				
deeplink	0.48	0.58	1.00			
buildhp	0.32	0.23	0.36	1.00		
again	0.42	0.34	0.45	0.58	1.00	
spndtime	0.34	0.20	0.27	0.39	0.55	1.00
bestsite	0.35	0.32	0.33	0.37	0.50	0.55
goodbad	0.21	0.18	0.28	0.25	0.41	0.25
pleasant	0.24	0.21	0.29	0.21	0.32	0.17
favorabl	0.18	0.14	0.27	0.25	0.36	0.23
likely	0.13	0.14	0.14	0.25	0.43	0.25
probable	0.14	0.15	0.18	0.31	0.47	0.30

Correlation Matrix

	bestsite	goodbad	pleasant	favorabl	likely	probable
	--------	--------	--------	--------	--------	--------
bestsite	1.00					
goodbad	0.35	1.00				
pleasant	0.27	0.59	1.00			
favorabl	0.29	0.76	0.52	1.00		
likely	0.25	0.44	0.27	0.38	1.00	
probable	0.28	0.44	0.30	0.42	0.89	1.00

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Number of Iterations = 35

LISREL Estimates (Maximum Likelihood)

     Measurement Equations

   learn = 0.46*infomtv, Errorvar.= 0.78 , R^2 = 0.22
      (0.059)   (0.065)
      7.85   12.06

  passtime = 0.52*entermtv, Errorvar.= 0.73 , R^2 = 0.27
      (0.052)   (0.057)
      10.00   12.87

 otherppl = 0.71*sointmtv, Errorvar.= 0.50 , R^2 = 0.50

```
                 (0.050)                    (0.048)
                 14.31                      10.40

  useful = 0.50*infomtv, Errorvar.= 0.75  , R² = 0.25
           (0.059)                    (0.064)
           8.57                       11.70

 freeexps = 0.78*sointmtv, Errorvar.= 0.39  , R² = 0.61
            (0.048)                     (0.048)
            16.06                       8.57

 convenit = 0.70*convemtv, Errorvar.= 0.51  , R² = 0.49
            (0.055)                     (0.058)
            12.76                       8.84

 justlike = 0.55*entermtv, Errorvar.= 0.70  , R² = 0.30
            (0.051)                     (0.055)
            10.67                       12.70

 enjoyabl = 0.79*entermtv, Errorvar.= 0.37  , R² = 0.63
            (0.047)                     (0.042)
            16.83                       8.84

 research = 0.71*infomtv, Errorvar.= 0.50  , R² = 0.50
            (0.061)                    (0.070)
            11.55                      7.08

 meettalk = 0.71*sointmtv, Errorvar.= 0.49  , R² = 0.51
            (0.049)                     (0.048)
            14.37                       10.35

   useany = 0.49*convemtv, Errorvar.= 0.76  , R² = 0.24
            (0.056)                     (0.062)
            8.76                        12.25

 entertng = 0.83*entermtv, Errorvar.= 0.31  , R² = 0.69
            (0.046)                     (0.042)
            17.85                       7.53

 lessefft = 0.62*convemtv, Errorvar.= 0.61  , R² = 0.39
            (0.055)                     (0.058)
            11.33                       10.60

 duration = 1.00*lduratn,, R² = 1.00

 signinhp = 0.73*hhint, Errorvar.= 0.47  , R² = 0.53
            (0.048)                 (0.045)
            15.10                   10.58

 phonmail = 0.76*hhint, Errorvar.= 0.42  , R² = 0.58
            (0.048)                 (0.043)
            16.00                   9.78

  usesrch = 0.62*hmint, Errorvar.= 0.61  , R² = 0.39
            (0.050)                 (0.051)
            12.47                   12.02

 feedback = 0.63*hhint, Errorvar.= 0.60  , R² = 0.40
            (0.050)                 (0.050)
            12.63                   11.96

 usemulti = 0.68*hmint, Errorvar.= 0.53  , R² = 0.47
            (0.049)                 (0.047)
            13.93                   11.34

 staylong = 0.67*hmint, Errorvar.= 0.55  , R² = 0.45
            (0.049)                 (0.048)
            13.70                   11.46

 deeplink = 0.77*hmint, Errorvar.= 0.41  , R² = 0.59
            (0.047)                 (0.043)
```

```
            16.25                    9.67

buildhp = 0.65*attsite, Errorvar.= 0.58  , R² = 0.42
         (0.048)                    (0.046)
          13.58                     12.46

  again = 0.87*attsite, Errorvar.= 0.25  , R² = 0.75
         (0.043)                    (0.032)
          20.15                      7.75

spndtime = 0.65*attsite, Errorvar.= 0.58  , R² = 0.42
          (0.048)                   (0.046)
           13.57                    12.47

bestsite = 0.61*attsite, Errorvar.= 0.63  , R² = 0.37
          (0.049)                   (0.049)
           12.46                    12.75

 goodbad = 0.91*atthp, Errorvar.= 0.17  , R² = 0.83
          (0.043)                 (0.033)
           21.48                   4.97

pleasant = 0.65*atthp, Errorvar.= 0.58  , R² = 0.42
          (0.048)                 (0.046)
           13.55                  12.59

favorabl = 0.83*atthp, Errorvar.= 0.31  , R² = 0.69
          (0.044)                 (0.035)
           18.76                   9.00

  likely = 0.90*purchsei, Errorvar.= 0.19  , R² = 0.81
          (0.042)                   (0.032)
           21.19                     5.95

probable = 0.99*purchsei, Errorvar.= 0.027 , R² = 0.97
          (0.041)                   (0.035)
           24.32                     0.78


Error Covariance for useful and learn = 0.28
                                       (0.050)
                                        5.55
```

Correlation Matrix of Independent Variables

	infomtv	convemtv	entermtv	sointmtv	lduratn	hmint
infomtv	1.00					
convemtv	0.76	1.00				
	(0.06)					
	11.76					
entermtv	0.49	0.52	1.00			
	(0.06)	(0.06)				
	7.69	9.18				
sointmtv	0.05	0.00	0.40	1.00		
	(0.07)	(0.07)	(0.06)			
	0.66	-0.04	7.05			
lduratn	0.06	-0.08	-0.02	0.14	1.00	
	(0.07)	(0.06)	(0.06)	(0.06)	(0.07)	
	0.89	-1.27	-0.38	2.50	13.86	
hmint	0.33	0.28	0.13	-0.19	-0.04	1.00
	(0.07)	(0.07)	(0.06)	(0.06)	(0.06)	
	4.75	4.15	2.09	-3.07	-0.70	
hhint	0.06	0.10	0.12	0.34	0.07	0.58

	(0.08)	(0.07)	(0.06)	(0.06)	(0.06)	(0.05)
	0.74	1.41	1.89	5.60	1.26	11.54
attsite	0.23	0.17	0.13	0.15	0.06	0.68
	(0.07)	(0.07)	(0.06)	(0.06)	(0.06)	(0.04)
	3.31	2.45	2.21	2.37	1.03	16.73
atthp	0.28	0.31	0.17	-0.12	0.03	0.38
	(0.07)	(0.06)	(0.06)	(0.06)	(0.05)	(0.05)
	4.12	4.94	2.88	-2.01	0.51	7.11
purchsei	0.16	0.20	0.09	0.21	0.06	0.23
	(0.07)	(0.06)	(0.06)	(0.06)	(0.05)	(0.06)
	2.35	3.25	1.56	3.64	1.19	4.06

Correlation Matrix of Independent Variables

	hhint	attsite	atthp	purchsei
	-------	-------	-------	--------
hhint	1.00			
attsite	0.81	1.00		
	(0.03)			
	24.21			
atthp	0.29	0.51	1.00	
	(0.06)	(0.05)		
	5.03	10.89		
purchsei	0.38	0.52	0.50	1.00
	(0.05)	(0.04)	(0.04)	
	7.18	11.77	11.56	

Goodness of Fit Statistics

Degrees of Freedom = 360
Minimum Fit Function Chi-Square = 695.97 (P = 0.0)
Normal Theory Weighted Least Squares Chi-Square = 700.45 (P = 0.0)
Estimated Non-centrality Parameter (NCP) = 340.45
90 Percent Confidence Interval for NCP = (269.26 ; 419.43)

Minimum Fit Function Value = 1.81
Population Discrepancy Function Value (F0) = 0.89
90 Percent Confidence Interval for F0 = (0.70 ; 1.09)
Root Mean Square Error of Approximation (RMSEA) = 0.050
90 Percent Confidence Interval for RMSEA = (0.044 ; 0.055)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.54

Expected Cross-Validation Index (ECVI) = 2.37
90 Percent Confidence Interval for ECVI = (2.19 ; 2.58)
ECVI for Saturated Model = 2.42
ECVI for Independence Model = 13.00

Chi-Square for Independence Model with 435 Degrees of Freedom = 4933.25
Independence AIC = 4993.25
Model AIC = 910.45
Saturated AIC = 930.00
Independence CAIC = 5141.85
Model CAIC = 1430.54
Saturated CAIC = 3233.26

Normed Fit Index (NFI) = 0.86
Non-Normed Fit Index (NNFI) = 0.91
Parsimony Normed Fit Index (PNFI) = 0.71
Comparative Fit Index (CFI) = 0.93
Incremental Fit Index (IFI) = 0.93
Relative Fit Index (RFI) = 0.83

Critical N (CN) = 235.68

Root Mean Square Residual (RMR) = 0.052
Standardized RMR = 0.052
Goodness of Fit Index (GFI) = 0.89
Adjusted Goodness of Fit Index (AGFI) = 0.86
Parsimony Goodness of Fit Index (PGFI) = 0.69

Hanjun Ko: A SEM of Global Interactive Advertising, 2002

Fitted Covariance Matrix

	learn	passtime	otherppl	useful	freeexps	convenit
learn	1.00					
passtime	0.12	1.00				
otherppl	0.02	0.14	1.00			
useful	0.51	0.13	0.02	1.00		
freeexps	0.02	0.16	0.55	0.02	1.00	
convenit	0.25	0.19	0.00	0.27	0.00	1.00
justlike	0.13	0.28	0.15	0.14	0.17	0.20
enjoyabl	0.18	0.41	0.22	0.20	0.24	0.29
research	0.33	0.18	0.02	0.36	0.03	0.37
meettalk	0.02	0.15	0.50	0.02	0.55	0.00
useany	0.17	0.13	0.00	0.19	0.00	0.34
entertng	0.19	0.43	0.23	0.20	0.26	0.30
lessefft	0.22	0.17	0.00	0.24	0.00	0.43
duration	0.03	-0.01	0.10	0.03	0.11	-0.06
signinhp	0.02	0.05	0.17	0.02	0.19	0.05
phonmail	0.02	0.05	0.18	0.02	0.20	0.05
usesrch	0.10	0.04	-0.09	0.10	-0.09	0.12
feedback	0.02	0.04	0.15	0.02	0.17	0.04
usemulti	0.11	0.05	-0.09	0.11	-0.10	0.13
staylong	0.10	0.05	-0.09	0.11	-0.10	0.13
deeplink	0.12	0.05	-0.11	0.13	-0.12	0.15
buildhp	0.07	0.05	0.07	0.08	0.07	0.08
again	0.09	0.06	0.09	0.10	0.10	0.10
spndtime	0.07	0.04	0.07	0.08	0.07	0.08
bestsite	0.07	0.04	0.06	0.07	0.07	0.07
goodbad	0.12	0.08	-0.08	0.13	-0.09	0.20
pleasant	0.08	0.06	-0.06	0.09	-0.06	0.14
favorabl	0.11	0.07	-0.07	0.12	-0.08	0.18
likely	0.07	0.04	0.13	0.07	0.14	0.13
probable	0.07	0.05	0.14	0.08	0.16	0.14

Fitted Covariance Matrix

	justlike	enjoyabl	research	meettalk	useany	entertng
justlike	1.00					
enjoyabl	0.43	1.00				
research	0.19	0.28	1.00			
meettalk	0.15	0.22	0.02	1.00		
useany	0.14	0.20	0.26	0.00	1.00	
entertng	0.45	0.66	0.29	0.23	0.21	1.00
lessefft	0.18	0.26	0.33	0.00	0.31	0.27
duration	-0.01	-0.02	0.04	0.10	-0.04	-0.02
signinhp	0.05	0.07	0.03	0.18	0.04	0.07
phonmail	0.05	0.07	0.03	0.18	0.04	0.08
usesrch	0.04	0.06	0.15	-0.09	0.09	0.07
feedback	0.04	0.06	0.03	0.15	0.04	0.07
usemulti	0.05	0.07	0.16	-0.09	0.09	0.07
staylong	0.05	0.07	0.16	-0.09	0.09	0.07
deeplink	0.05	0.08	0.18	-0.11	0.11	0.08
buildhp	0.05	0.07	0.11	0.07	0.05	0.07
again	0.06	0.09	0.14	0.09	0.07	0.10
spndtime	0.05	0.07	0.07	0.07	0.05	0.07
bestsite	0.04	0.06	0.10	0.06	0.05	0.07
goodbad	0.08	0.12	0.18	-0.08	0.14	0.13
pleasant	0.06	0.09	0.13	-0.06	0.10	0.09

favorabl	0.08	0.11	0.16	-0.07	0.13	0.12
likely	0.04	0.06	0.10	0.13	0.09	0.07
probable	0.05	0.07	0.11	0.14	0.10	0.07

Fitted Covariance Matrix

	lessefft	duration	signinhp	phonmail	usesrch	feedback
	--------	--------	--------	--------	--------	--------
lessefft	1.00					
duration	-0.05	1.00				
signinhp	0.05	0.05	1.00			
phonmail	0.05	0.06	0.55	1.00		
usesrch	0.11	-0.03	0.26	0.27	1.00	
feedback	0.04	0.05	0.46	0.48	0.23	1.00
usemulti	0.12	-0.03	0.29	0.30	0.43	0.25
staylong	0.12	-0.03	0.28	0.28	0.42	0.25
deeplink	0.13	-0.03	0.32	0.34	0.48	0.28
buildhp	0.07	0.04	0.38	0.40	0.28	0.33
again	0.09	0.05	0.51	0.54	0.37	0.44
spndtime	0.07	0.04	0.38	0.40	0.28	0.33
bestsite	0.06	0.04	0.36	0.38	0.26	0.31
goodbad	0.18	0.03	0.19	0.20	0.22	0.17
pleasant	0.12	0.02	0.14	0.14	0.15	0.12
favorabl	0.16	0.02	0.18	0.18	0.20	0.15
likely	0.11	0.06	0.25	0.25	0.13	0.21
probable	0.12	0.06	0.27	0.28	0.14	0.23

Fitted Covariance Matrix

	usemulti	staylong	deeplink	buildhp	again	spndtime
	--------	--------	--------	--------	--------	--------
usemulti	1.00					
staylong	0.46	1.00				
deeplink	0.52	0.52	1.00			
buildhp	0.30	0.30	0.34	1.00		
again	0.40	0.40	0.45	0.56	1.00	
spndtime	0.30	0.30	0.34	0.42	0.56	1.00
bestsite	0.28	0.28	0.32	0.40	0.53	0.39
goodbad	0.24	0.23	0.27	0.30	0.40	0.30
pleasant	0.17	0.17	0.19	0.21	0.28	0.21
favorabl	0.22	0.21	0.24	0.27	0.37	0.27
likely	0.14	0.14	0.16	0.30	0.40	0.30
probable	0.15	0.15	0.17	0.33	0.44	0.33

Fitted Covariance Matrix

	bestsite	goodbad	pleasant	favorabl	likely	probable
	--------	--------	--------	--------	--------	--------
bestsite	1.00					
goodbad	0.28	1.00				
pleasant	0.20	0.59	1.00			
favorabl	0.26	0.76	0.54	1.00		
likely	0.28	0.41	0.29	0.37	1.00	
probable	0.31	0.45	0.32	0.41	0.89	1.00

Fitted Residuals

	learn	passtime	otherppl	useful	freeexps	convenit
	--------	--------	--------	--------	--------	--------
learn	0.00					
passtime	-0.01	0.00				
otherppl	0.13	0.05	0.00			
useful	0.00	0.00	0.14	0.00		
freeexps	0.11	-0.06	-0.09	0.16	0.00	
convenit	-0.04	0.01	-0.09	-0.03	0.00	0.00
justlike	0.02	0.07	-0.06	0.05	0.04	0.02
enjoyabl	0.00	-0.02	-0.08	0.06	-0.04	0.02
research	-0.01	-0.03	-0.08	0.01	-0.09	0.00
meettalk	0.05	-0.03	-0.01	0.01	0.00	-0.05
useany	-0.06	-0.07	-0.07	-0.10	0.01	0.05
entertng	0.04	0.00	-0.04	0.09	0.00	-0.09

lessefft	0.03	-0.05	-0.01	0.03	0.06	-0.02
duration	0.06	-0.03	0.05	0.00	-0.03	0.00
signinhp	0.08	-0.02	-0.11	0.06	-0.01	0.01
phonmail	0.09	-0.07	-0.11	0.01	-0.01	0.02
usesrch	0.04	-0.05	-0.07	-0.08	0.07	0.00
feedback	0.12	-0.01	0.13	0.05	0.17	-0.10
usemulti	0.05	-0.04	-0.05	-0.06	0.07	-0.04
staylong	0.04	0.08	-0.04	0.02	0.03	0.02
deeplink	0.08	0.04	-0.04	0.01	-0.01	0.02
buildhp	0.07	-0.04	0.06	0.01	0.03	-0.08
again	0.08	-0.04	-0.07	0.05	0.01	0.01
spndtime	0.06	-0.06	0.03	0.03	0.10	-0.03
bestsite	-0.04	-0.13	-0.13	0.00	-0.09	0.01
goodbad	0.05	0.00	-0.07	-0.03	0.01	0.01
pleasant	0.06	-0.02	-0.11	0.02	-0.06	0.06
favorabl	0.12	0.00	-0.07	0.05	0.03	0.04
likely	0.01	-0.04	-0.07	0.06	0.02	0.00
probable	0.06	-0.02	-0.05	0.08	0.03	0.03

Fitted Residuals

	justlike	enjoyabl	research	meettalk	useany	entertng
justlike	0.00					
enjoyabl	0.00	0.00				
research	-0.06	0.00	0.00			
meettalk	0.01	0.05	-0.02	0.00		
useany	0.04	-0.06	0.00	0.11	0.00	
entertng	-0.02	0.00	-0.04	0.11	0.03	0.00
lessefft	-0.02	0.06	0.05	0.09	-0.03	0.07
duration	-0.01	0.00	-0.02	-0.02	-0.05	0.01
signinhp	0.01	-0.02	0.01	-0.02	0.06	0.01
phonmail	0.03	-0.02	-0.05	-0.04	0.03	0.03
usesrch	0.00	-0.02	0.00	0.05	0.06	-0.05
feedback	-0.05	0.00	-0.10	0.12	-0.04	0.02
usemulti	-0.03	-0.03	-0.07	0.08	0.06	0.02
staylong	-0.03	0.04	0.02	-0.01	0.02	0.05
deeplink	-0.03	0.00	0.01	-0.08	-0.02	-0.01
buildhp	-0.05	-0.07	-0.05	0.07	-0.07	-0.06
again	-0.03	-0.01	-0.02	0.02	-0.02	0.02
spndtime	0.06	0.14	-0.05	0.09	0.02	0.12
bestsite	-0.04	-0.02	-0.01	-0.09	0.08	-0.02
goodbad	0.06	0.01	-0.04	0.08	0.02	-0.02
pleasant	0.03	-0.01	-0.01	-0.03	0.06	-0.07
favorabl	0.05	0.03	0.02	0.08	-0.03	-0.01
likely	0.04	-0.04	-0.07	-0.04	-0.11	-0.02
probable	0.04	-0.01	-0.04	0.01	-0.05	0.01

Fitted Residuals

	lessefft	duration	signinhp	phonmail	usesrch	feedback
lessefft	0.00					
duration	0.03	0.00				
signinhp	0.01	-0.05	0.00			
phonmail	0.02	0.00	0.03	0.00		
usesrch	-0.02	0.09	0.11	0.09	0.00	
feedback	-0.03	0.08	-0.03	-0.02	0.02	0.00
usemulti	-0.04	0.05	0.01	-0.05	0.05	0.13
staylong	0.00	-0.04	-0.04	-0.09	-0.07	-0.03
deeplink	-0.01	-0.06	0.04	-0.04	-0.03	-0.05
buildhp	-0.04	0.02	0.05	-0.01	0.00	0.05
again	0.01	-0.01	0.01	0.03	0.06	-0.07
spndtime	0.09	-0.01	0.00	0.07	0.03	0.01
bestsite	0.07	0.02	-0.07	-0.03	0.09	-0.12
goodbad	-0.04	-0.01	0.02	0.05	0.05	-0.17
pleasant	-0.09	-0.02	0.04	0.03	0.09	-0.10
favorabl	-0.02	0.03	0.07	0.06	-0.02	-0.09
likely	-0.01	0.03	0.02	0.03	0.01	-0.03
probable	0.00	0.00	0.03	-0.01	0.00	-0.03

Fitted Residuals

	usemulti	staylong	deeplink	buildhp	again	spndtime
	--------	--------	--------	--------	--------	--------
usemulti	0.00					
staylong	0.04	0.00				
deeplink	-0.05	0.06	0.00			
buildhp	0.01	-0.07	0.02	0.00		
again	0.02	-0.06	0.00	0.01	0.00	
spndtime	0.04	-0.10	-0.07	-0.04	-0.02	0.00
bestsite	0.07	0.05	0.02	-0.02	-0.02	0.16
goodbad	-0.03	-0.06	0.01	-0.05	0.01	-0.05
pleasant	0.07	0.04	0.10	-0.01	0.04	-0.04
favorabl	-0.03	-0.08	0.02	-0.02	0.00	-0.04
likely	-0.01	0.00	-0.01	-0.05	0.03	-0.05
probable	-0.01	0.01	0.01	-0.02	0.03	-0.03

Fitted Residuals

	bestsite	goodbad	pleasant	favorabl	likely	probable
	--------	--------	--------	--------	--------	--------
bestsite	0.00					
goodbad	0.07	0.00				
pleasant	0.07	0.00	0.00			
favorabl	0.03	0.00	-0.02	0.00		
likely	-0.03	0.03	-0.02	0.01	0.00	
probable	-0.03	-0.01	-0.02	0.02	0.00	0.00

Summary Statistics for Fitted Residuals

```
Smallest Fitted Residual =   -0.17
  Median Fitted Residual =    0.00
 Largest Fitted Residual =    0.17
```

Stemleaf Plot

```
-16|6
-14|
-12|471
-10|20853100
 - 8|655408875511
 - 6|876444333321099886662210
 - 4|9887765533333322110099887776533222222221100000
 - 2|9999888777655444433222210000099888877665444443321 1000
 - 0|888888888777766665554444443333222219888887766655443332222111111110000 0+29
   0|11111222233444555566677788890000011112223333444555555666778888899
   2|00000112233345567778889000112333344445555555679
   4|00000223334555566788801111222224445556677799
   6|00001223457778913333444689
   8|012244555799011267
  10|680188
  12|25660
  14|0159
  16|1
```

Standardized Residuals

	learn	passtime	otherppl	useful	freeexps	convenit
	--------	--------	--------	--------	--------	--------
learn	- -					
passtime	-0.30	- -				
otherppl	2.82	1.06	- -			
useful	- -	0.00	3.23	- -		
freeexps	2.46	-1.48	1.09	3.80	- -	
convenit	-1.42	0.22	-2.57	-1.04	-0.08	- -
justlike	0.45	2.14	-1.33	1.24	0.98	0.58
enjoyabl	-0.03	-0.80	-2.42	1.61	-1.37	0.65
research	-0.47	-0.74	-2.35	0.47	-3.02	-0.16
meettalk	1.16	-0.66	-0.85	0.15	-0.23	-1.30
useany	-1.58	-1.50	-1.53	-2.52	0.30	2.24
entertng	0.99	0.10	-1.11	2.55	0.18	-3.39

lessefft	1.02	-1.26	-0.32	0.83	1.66	-1.33
duration	1.52	-0.81	1.81	-0.05	-1.16	0.04
signinhp	1.91	-0.39	-3.06	1.39	-0.41	0.19
phonmail	2.11	-1.69	-3.26	0.33	-0.24	0.54
usesrch	1.00	-1.01	-1.72	-1.95	1.88	0.05
feedback	2.56	-0.24	3.28	1.16	4.59	-2.51
usemulti	1.19	-0.85	-1.33	-1.31	1.86	-1.14
staylong	1.03	1.78	-0.97	0.48	0.76	0.66
deeplink	2.05	0.96	-1.02	0.29	-0.16	0.59
buildhp	1.61	-0.80	1.33	0.34	0.87	-1.94
again	1.89	-0.89	-2.12	1.31	0.20	0.22
spndtime	1.30	-1.23	0.82	0.61	2.45	-0.84
bestsite	-0.82	-2.70	-3.14	0.09	-2.14	0.18
goodbad	1.24	-0.03	-2.34	-0.76	0.28	0.51
pleasant	1.30	-0.45	-2.49	0.49	-1.53	1.43
favorabl	2.87	0.02	-1.91	1.22	1.02	1.28
likely	0.33	-0.97	-2.16	1.60	0.51	0.11
probable	1.50	-0.43	-1.53	2.08	1.38	1.21

Standardized Residuals

	justlike	enjoyabl	research	meettalk	useany	entertng
justlike	- -					
enjoyabl	-0.20	- -				
research	-1.47	-0.01	- -			
meettalk	0.27	1.55	-0.61	- -		
useany	0.98	-1.60	0.07	2.42	- -	
entertng	-1.21	0.76	-1.73	3.50	0.95	- -
lessefft	-0.56	1.99	1.97	2.12	-0.97	2.27
duration	-0.15	-0.04	-0.85	-0.53	-1.13	0.57
signinhp	0.30	-0.52	0.25	-0.46	1.30	0.35
phonmail	0.69	-0.50	-1.62	-1.13	0.77	0.89
usesrch	-0.03	-0.61	-0.02	1.23	1.25	-1.27
feedback	-1.08	-0.03	-2.66	3.07	-0.95	0.50
usemulti	-0.66	-0.75	-2.13	2.07	1.37	0.65
staylong	-0.66	1.12	0.48	-0.31	0.55	1.38
deeplink	-0.62	-0.09	0.39	-2.18	-0.47	-0.25
buildhp	-1.15	-1.66	-1.28	1.61	-1.60	-1.43
again	-0.76	-0.49	-0.92	0.62	-0.44	0.79
spndtime	1.21	3.55	-1.25	2.14	0.44	3.25
bestsite	-0.91	-0.59	-0.18	-2.21	1.76	-0.46
goodbad	1.52	0.25	-1.82	2.46	0.47	-1.07
pleasant	0.75	-0.15	-0.21	-0.71	1.42	-1.68
favorabl	1.28	1.08	0.56	2.37	-0.78	-0.45
likely	1.00	-1.36	-2.73	-1.14	-2.62	-0.85
probable	0.99	-0.48	-2.02	0.41	-1.27	0.47

Standardized Residuals

	lessefft	duration	signinhp	phonmail	usesrch	feedback
lessefft	- -					
duration	0.86	- -				
signinhp	0.34	-1.90	- -			
phonmail	0.45	-0.03	2.48	- -		
usesrch	-0.39	2.34	3.12	2.61	- -	
feedback	-0.75	2.27	-1.70	-0.87	0.53	- -
usemulti	-1.06	1.60	0.15	-1.66	2.35	3.40
staylong	-0.07	-1.11	-1.25	-2.63	-3.09	-0.70
deeplink	-0.39	-2.26	1.46	-1.50	-1.97	-1.49
buildhp	-0.92	0.43	1.62	-0.50	0.03	1.58
again	0.22	-0.50	0.84	1.80	1.99	-3.07
spndtime	2.17	-0.24	0.05	2.43	0.86	0.30
bestsite	1.69	0.55	-2.30	-1.08	2.41	-3.57
goodbad	-1.26	-0.98	0.79	1.76	1.49	-4.80
pleasant	-2.11	-0.48	0.89	0.65	2.09	-2.40
favorabl	-0.68	1.36	2.24	1.89	-0.54	-2.49
likely	-0.39	1.66	0.62	1.23	0.27	-0.93
probable	0.05	-1.66	1.36	-0.62	0.11	-1.06

Standardized Residuals

	usemulti	staylong	deeplink	buildhp	again	spndtime
usemulti	- -					
staylong	1.92	- -				
deeplink	-3.09	3.80	0.56			
buildhp	0.42	-2.05	-0.20	1.16		
again	0.63	-2.29	-2.28	-1.39	-1.56	
spndtime	1.06	-2.84	0.46	-0.88	-1.79	5.64
bestsite	1.84	1.27	0.56	-1.62	0.61	-1.64
goodbad	-0.93	-1.82	2.49	-0.19	1.16	-1.00
pleasant	1.79	1.08	0.71	-0.57	-0.05	-1.17
favorabl	-0.93	-2.17	-0.46	-1.65	1.54	-1.64
likely	-0.39	-0.05	0.20	-0.60	1.94	-1.10
probable	-0.38	0.16				

Standardized Residuals

	bestsite	goodbad	pleasant	favorabl	likely	probable
bestsite	- -					
goodbad	2.19	- -				
pleasant	1.75	0.12	- -			
favorabl	0.86	1.30	-1.13	- -		
likely	-1.00	2.02	-0.52	0.43	- -	
probable	-0.85	-0.88	-0.51	0.81	- -	- -

Summary Statistics for Standardized Residuals

Smallest Standardized Residual =   -4.80
  Median Standardized Residual =   0.00
 Largest Standardized Residual =   5.64

Stemleaf Plot

```
- 4|8
- 3|643111110
- 2|8777666555544333333322221111100
- 1|99998887777777766666666655555555544444433333333222211111111111111000000+05
- 0|9999999999999888888888887777777666666665555555555555555544444444433332+64
  0|11111111222222222233333333333344444455555555555555556666666666666667778+15
  1|00000000000111111222222222222233333333334444444445555556666666677888888888+07
  2|000001111111222233344444455556689
  3|1122345688
  4|6
  5|6
```

Largest Negative Standardized Residuals
Residual for research and freeexps -3.02
Residual for entertng and convenit -3.39
Residual for signinhp and otherppl -3.06
Residual for phonmail and otherppl -3.26
Residual for feedback and research -2.66
Residual for staylong and phonmail -2.63
Residual for staylong and usesrch   -3.09
Residual for deeplink and usemulti -3.09
Residual for   again and feedback -3.07
Residual for spndtime and staylong -2.84
Residual for bestsite and passtime -2.70
Residual for bestsite and otherppl -3.14
Residual for bestsite and feedback -3.57
Residual for goodbad and feedback -4.80
Residual for   likely and research -2.73
Residual for   likely and useany   -2.62
Largest Positive Standardized Residuals
Residual for otherppl and   learn   2.82
Residual for   useful and otherppl   3.23
Residual for freeexps and   useful   3.80
Residual for entertng and meettalk   3.50
Residual for usesrch and signinhp   3.12
Residual for usesrch and phonmail   2.61

```
Residual for feedback and otherppl    3.28
Residual for feedback and freeexps    4.59
Residual for feedback and meettalk    3.07
Residual for usemulti and feedback    3.40
Residual for deeplink and staylong    3.80
Residual for spndtime and enjoyabl    3.55
Residual for spndtime and entertng    3.25
Residual for bestsite and spndtime    5.64
Residual for favorabl and    learn     2.87
```

Hanjun Ko: A SEM of Global Interactive Advertising, 2002
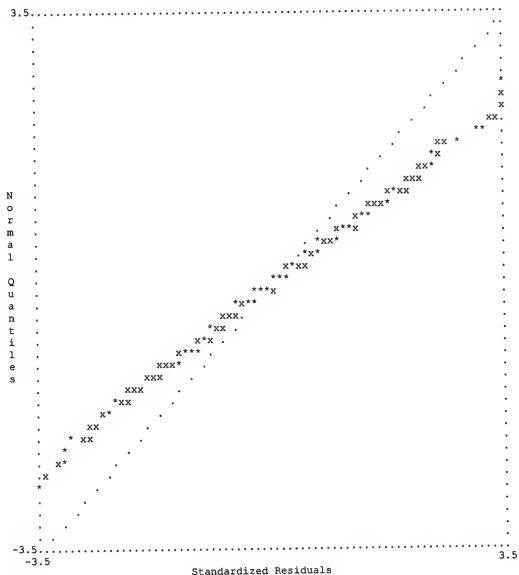
Qplot of Standardized Residuals

Hanjun Ko: A SEM of Global Interactive Advertising, 2002

Modification Indices and Expected Change

The Modification Indices Suggest to Add the

Path to	from	Decrease in Chi-Square	New Estimate
otherppl	atthp	8.1	-0.13
research	sointmtv	16.7	-0.30
research	hhint	8.2	-0.21

```
usesrch    hhint         10.3              0.21
feedback   sointmtv      23.6              0.26
feedback   attsite       10.6             -0.37
feedback   atthp         21.8             -0.23
staylong   attsite        8.1             -0.21
spndtime   entermtv      11.5              0.16
spndtime   sointmtv       9.1              0.14
bestsite   sointmtv      13.9             -0.18
bestsite   hhint         11.2             -0.35
```

Modification Indices for LAMBDA-X

	infomtv	convemtv	entermtv	sointmtv	lduratn	hmint
learn	- -	0.48	0.00	1.91	2.38	4.63
passtime	0.65	0.62	- -	0.70	0.65	0.00
otherppl	1.19	6.64	4.50	- -	3.29	5.20
useful	- -	0.16	5.28	6.88	0.38	1.97
freeexps	0.05	0.91	0.33	- -	1.36	3.12
convenit	2.24	- -	3.58	4.16	0.00	0.01
justlike	0.25	0.14	- -	0.01	0.02	0.50
enjoyabl	1.01	1.18	- -	1.94	0.00	0.00
research	- -	1.96	6.37	16.73	0.73	0.40
meettalk	0.69	2.32	7.52	- -	0.28	0.11
useany	1.77	- -	0.02	0.04	1.27	0.40
entertng	0.04	0.70	- -	3.05	0.32	0.12
lessefft	7.20	- -	4.37	4.05	0.73	0.34
duration	- -	- -	- -	- -	- -	- -
signinhp	1.64	2.07	0.00	3.86	3.61	3.60
phonmail	0.02	0.61	0.01	4.40	0.00	0.79
usesrch	0.23	0.09	1.04	0.95	5.50	- -
feedback	1.81	6.97	0.03	23.55	5.16	1.29
usemulti	2.12	2.16	0.10	1.65	2.57	- -
staylong	1.28	1.15	2.11	0.03	1.23	- -
deeplink	0.45	0.36	0.03	2.98	5.10	- -
buildhp	2.34	5.83	3.31	2.10	0.19	0.49
again	0.24	0.27	0.14	0.60	0.25	0.00
spndtime	0.05	0.55	11.53	9.09	0.06	2.37
bestsite	0.48	1.09	1.32	13.88	0.30	5.63
goodbad	2.75	0.93	0.02	0.03	0.96	0.79
pleasant	0.31	0.13	0.93	5.40	0.23	7.84
favorabl	1.99	0.63	0.57	1.71	1.86	0.87
likely	4.06	3.36	2.80	2.01	2.77	0.11
probable	4.06	3.36	2.80	2.01	2.77	0.11

Modification Indices for LAMBDA-X

	hhint	attsite	atthp	purchsei
learn	6.53	3.93	3.74	0.48
passtime	1.57	1.72	0.03	0.28
otherppl	5.39	4.39	8.10	2.88
useful	0.12	0.09	0.44	2.37
freeexps	3.00	1.24	0.15	1.73
convenit	0.70	0.21	1.56	1.18
justlike	0.02	2.22	2.17	1.04
enjoyabl	0.42	0.01	0.34	0.38
research	8.21	5.12	1.45	5.29
meettalk	0.17	0.75	5.80	0.06
useany	0.38	0.00	0.01	2.05
entertng	1.92	1.05	1.76	0.08
lessefft	0.16	0.27	1.99	0.00
duration	- -	- -	- -	- -
signinhp	- -	2.09	2.96	1.72
phonmail	- -	2.23	4.81	0.12
usesrch	10.31	6.90	1.30	0.03
feedback	- -	10.64	21.76	1.24
usemulti	1.45	1.24	0.47	0.14
staylong	6.89	8.12	3.17	0.01
deeplink	1.74	0.37	1.53	0.01
buildhp	2.82	- -	2.34	0.56

again	0.29	- -	0.94	3.97
spndtime	4.39	- -	3.13	1.41
bestsite	11.15	- -	4.65	0.76
goodbad	0.74	0.42	- -	0.16
pleasant	0.07	0.90	- -	0.29
favorabl	0.56	0.00	- -	0.62
likely	0.06	0.08	2.62	- -
probable	0.06	0.08	2.62	- -

Expected Change for LAMBDA-X

	infomtv	convemtv	entermtv	sointmtv	lduratn	hmint
learn	- -	-0.08	0.00	0.07	0.07	0.11
passtime	-0.06	-0.05	- -	-0.05	-0.04	-0.11
otherppl	-0.06	-0.13	-0.11	- -	0.08	-0.11
useful	- -	-0.05	0.14	0.13	-0.03	-0.07
freeexps	0.01	0.05	-0.03	- -	-0.05	0.08
convenit	-0.23	- -	-0.15	-0.12	0.00	0.00
justlike	-0.03	0.03	- -	0.01	-0.01	-0.04
enjoyabl	0.06	0.07	- -	-0.07	0.00	0.00
research	- -	0.32	-0.25	-0.30	-0.06	-0.05
meettalk	0.04	0.08	0.14	- -	-0.02	0.02
useany	-0.17	- -	-0.01	0.01	-0.06	0.04
entertng	-0.01	-0.05	- -	0.09	0.02	0.02
lessefft	0.38	- -	0.15	0.11	0.04	-0.03
duration	- -	- -	- -	- -	- -	- -
signinhp	0.07	0.07	0.00	-0.10	-0.08	0.12
phonmail	-0.01	0.04	0.00	-0.11	0.00	-0.06
usesrch	-0.03	-0.02	-0.05	0.05	0.10	
feedback	-0.07	-0.14	0.01	-0.01	0.07	-0.08
usemulti	-0.08	-0.08	-0.01	0.06	0.07	- -
staylong	0.06	0.06	0.07	-0.01	-0.05	- -
deeplink	0.04	0.03	-0.01	-0.08	-0.09	- -
buildhp	-0.08	-0.12	-0.08	0.07	0.02	-0.05
again	0.02	0.02	-0.02	-0.03	-0.02	0.00
spndtime	0.01	0.04	0.16	0.14	-0.01	-0.11
bestsite	0.04	0.05	-0.05	-0.18	0.02	0.17
goodbad	-0.07	-0.04	0.00	0.01	-0.03	-0.04
pleasant	0.03	0.02	-0.04	-0.11	-0.02	0.14
favorabl	0.06	0.03	0.03	0.05	0.05	-0.04
likely	-0.06	-0.05	-0.04	-0.04	0.04	-0.01
probable	0.07	0.06	0.05	0.04	-0.04	0.01

Expected Change for LAMBDA-X

	hhint	attsite	atthp	purchsei
learn	0.12	0.10	0.10	0.03
passtime	-0.06	-0.06	-0.01	-0.02
otherppl	-0.12	-0.10	-0.13	-0.08
useful	0.02	0.01	-0.03	0.07
freeexps	0.09	0.05	0.02	0.06
convenit	-0.05	-0.03	0.08	0.06
justlike	-0.01	-0.02	0.07	0.05
enjoyabl	-0.03	-0.01	0.02	-0.02
research	-0.21	-0.16	-0.09	-0.15
meettalk	0.02	0.04	0.11	0.01
useany	0.03	0.00	0.01	-0.07
entertng	0.06	0.04	-0.06	0.01
lessefft	0.02	0.03	-0.08	0.00
duration	- -	- -	- -	- -
signinhp	- -	0.17	0.09	0.06
phonmail	- -	0.18	0.11	-0.02
usesrch	0.21	0.19	0.06	0.01
feedback	- -	-0.37	-0.23	-0.06
usemulti	0.08	0.08	-0.03	-0.02
staylong	-0.17	-0.21	-0.09	0.00
deeplink	-0.08	-0.04	0.06	0.00
buildhp	0.17	- -	-0.08	-0.04
again	-0.06	- -	0.05	0.10

spndtime	0.22	- -	-0.10	-0.06
bestsite	-0.35	- -	0.12	-0.05
goodbad	-0.04	-0.03	- -	-0.02
pleasant	0.01	0.05	- -	-0.03
favorabl	0.03	0.00	- -	0.03
likely	0.01	-0.01	0.07	- -
probable	-0.01	0.01	-0.07	- -

No Non-Zero Modification Indices for PHI

The Modification Indices Suggest to Add an Error Covariance

Between	and	Decrease in Chi-Square	New Estimate
otherppl	passtime	11.8	0.12
meettalk	useful	11.0	-0.11
useany	enjoyabl	8.8	0.11
useany	meettalk	9.7	0.11
entertng	convenit	15.3	-0.12
feedback	otherppl	8.1	0.10
usemulti	phonmail	10.8	-0.10
usemulti	feedback	25.9	0.17
staylong	usesrch	9.6	-0.11
deeplink	meettalk	10.6	-0.10
deeplink	usemulti	9.6	-0.12
deeplink	staylong	14.4	0.14
spndtime	enjoyabl	8.4	0.08
bestsite	spndtime	31.8	0.19
likely	phonmail	10.0	0.05
likely	goodbad	10.9	0.05
probable	phonmail	12.6	-0.06
probable	goodbad	10.3	-0.05

Modification Indices for THETA-DELTA

	learn	passtime	otherppl	useful	freeexps	convenit
learn	- -					
passtime	0.04	- -				
otherppl	3.03	11.84	- -			
useful	- -	0.35	2.60	- -		
freeexps	0.09	2.25	1.19	5.38	- -	
convenit	0.75	2.44	0.51	0.07	1.62	- -
justlike	0.02	4.59	1.30	0.29	4.02	1.73
enjoyabl	1.45	0.65	1.43	0.03	0.59	4.01
research	0.22	0.02	0.23	0.22	5.85	0.00
meettalk	0.09	2.59	0.72	11.04	0.05	4.55
useany	0.21	2.33	2.21	3.85	0.01	5.04
entertng	0.07	0.01	0.70	1.83	0.48	15.26
lessefft	0.61	4.29	0.32	0.09	0.04	1.76
duration	1.56	0.41	2.46	0.94	1.23	0.09
signinhp	0.31	0.46	2.99	0.19	0.03	0.03
phonmail	0.46	2.38	4.00	1.45	0.00	1.56
usesrch	1.28	0.91	5.35	5.32	1.75	0.10
feedback	2.76	0.26	8.12	0.30	3.84	0.60
usemulti	1.40	1.42	2.83	0.82	0.61	0.03
staylong	0.47	4.13	0.09	0.82	0.13	0.30
deeplink	0.82	3.55	4.73	0.27	0.08	0.77
buildhp	1.18	0.75	6.76	0.01	0.82	0.77
again	0.18	0.29	0.68	0.61	0.51	0.85
spndtime	0.00	6.90	0.04	0.01	0.09	3.41
bestsite	7.86	5.41	0.14	0.02	0.05	0.15
goodbad	0.00	0.22	0.02	0.03	3.08	0.41
pleasant	0.00	0.00	0.01	0.12	0.15	1.80
favorabl	3.08	0.01	1.77	0.70	0.06	0.20
likely	2.20	0.13	0.59	1.38	0.50	0.01
probable	0.77	0.25	0.32	0.03	0.01	0.32

Modification Indices for THETA-DELTA

	justlike	enjoyabl	research	meettalk	useany	entertng
justlike	- -					

enjoyabl	0.04	- -			
research	1.45	0.96	- -		
meettalk	1.13	1.19	0.78		
useany	1.35	8.77	0.29	9.72		
enterting	1.47	0.58	0.72	5.87	5.10	
lessefft	3.46	0.74	1.34	0.65	0.94	5.33
duration	0.04	0.02	0.04	0.12	1.10	0.11
signinhp	0.49	0.18	1.93	0.19	0.79	0.20
phonmail	2.28	0.06	0.27	0.79	0.10	0.52
usesrch	1.19	0.00	0.48	0.94	2.25	2.32
feedback	2.63	0.04	3.63	0.34	0.37	0.01
usemulti	0.06	1.50	4.18	5.23	5.06	3.00
staylong	1.65	0.15	0.03	0.47	0.02	0.38
deeplink	0.04	0.00	0.40	10.64	3.24	0.55
buildhp	0.16	0.81	0.19	0.62	1.39	1.31
again	1.12	0.47	0.61	0.31	1.40	0.68
spndtime	0.01	8.36	1.42	0.05	0.11	1.57
bestsite	0.17	0.18	0.01	0.64	4.13	0.02
goodbad	1.09	0.38	1.34	2.48	2.72	0.01
pleasant	0.28	0.30	0.08	0.70	3.23	1.84
favorabl	0.00	0.66	0.99	0.25	4.21	0.27
likely	1.85	0.09	0.71	4.10	5.97	0.10
probable	0.68	0.03	0.19	1.65	1.35	0.18

Modification Indices for THETA-DELTA

	lessefft	duration	signinhp	phonmail	usesrch	feedback
lessefft	- -					
duration	0.27	- -				
signinhp	0.58	3.22	- -			
phonmail	0.01	0.04	6.16	- -		
usesrch	0.00	4.21	1.89	3.42	- -	
feedback	0.14	3.44	2.88	0.77	0.20	- -
usemulti	0.09	2.45	3.34	10.80	5.54	25.91
staylong	0.16	0.66	1.20	2.46	9.56	1.32
deeplink	0.23	5.08	3.52	0.74	3.86	0.58
buildhp	0.03	0.00	0.75	4.01	0.94	6.06
again	0.54	0.31	0.13	3.63	0.21	3.43
spndtime	6.64	0.06	1.86	2.96	0.29	0.57
bestsite	2.40	1.42	3.10	0.00	0.70	4.62
goodbad	0.04	0.69	1.34	1.09	5.53	7.10
pleasant	6.65	0.02	0.01	0.32	0.24	0.27
favorabl	0.00	0.96	3.26	0.29	4.27	0.92
likely	0.16	2.97	1.08	9.99	0.26	0.04
probable	0.12	2.97	2.27	12.65	1.48	0.15

Modification Indices for THETA-DELTA

	usemulti	staylong	deeplink	buildhp	again	spndtime
usemulti	- -					
staylong	3.70	- -				
deeplink	9.57	14.44	- -			
buildhp	0.19	1.08	2.93	- -		
again	0.04	0.74	0.08	1.35	- -	
spndtime	3.27	2.80	4.30	1.93	2.42	- -
bestsite	0.45	2.78	0.85	0.77	3.21	31.77
goodbad	0.38	0.44	0.19	0.72	0.58	0.11
pleasant	1.23	0.62	0.47	0.01	0.29	0.92
favorabl	0.08	1.85	0.88	0.70	1.43	0.00
likely	0.00	0.00	1.07	4.25	0.96	1.65
probable	0.25	1.05	1.09	2.18	0.00	0.30

Modification Indices for THETA-DELTA

	bestsite	goodbad	pleasant	favorabl	likely	probable
bestsite	- -					
goodbad	2.94	- -				
pleasant	0.27	0.01	- -			

favorabl	1.34	1.70	1.27	- -		
likely	0.23	10.86	0.93	3.48	- -	
probable	0.04	10.33	0.57	3.93	- -	- -

Expected Change for THETA-DELTA

	learn	passtime	otherppl	useful	freeexps	convenit
learn	- -					
passtime	-0.01	- -				
otherppl	0.06	0.12	- -			
useful	- -	-0.02	0.05	- -		
freeexps	0.01	-0.05	0.05	0.07	- -	
convenit	-0.03	0.06	-0.02	-0.01	0.04	- -
justlike	0.00	0.09	-0.04	0.02	0.07	0.05
enjoyabl	-0.04	-0.03	-0.03	0.00	-0.02	0.06
research	-0.02	0.01	-0.02	0.02	-0.08	0.00
meettalk	0.01	-0.06	-0.04	-0.11	-0.01	-0.07
useany	-0.02	-0.06	-0.05	-0.08	0.00	0.11
entertng	0.01	0.00	-0.02	0.04	-0.02	-0.12
lessefft	0.03	-0.08	-0.02	0.01	0.01	0.08
duration	0.05	-0.03	0.07	-0.04	-0.05	0.02
signinhp	-0.02	0.02	-0.05	-0.04	0.00	0.04
phonmail	0.02	-0.05	-0.06	-0.04	0.00	0.04
usesrch	0.04	-0.04	-0.08	-0.08	0.04	0.01
feedback	0.06	0.02	0.10	0.02	0.06	-0.05
usemulti	0.04	-0.04	-0.05	-0.04	0.02	-0.03
staylong	-0.02	0.07	0.01	0.03	0.01	0.02
deeplink	0.03	0.06	0.07	0.02	-0.01	-0.03
buildhp	0.04	0.03	0.08	0.00	-0.03	-0.03
again	-0.01	0.02	-0.02	0.02	-0.02	0.03
spndtime	0.00	-0.09	0.01	0.00	0.01	-0.06
bestsite	-0.10	-0.09	-0.01	0.00	-0.01	-0.01
goodbad	0.00	0.01	0.00	-0.04	-0.01	-0.02
pleasant	0.00	0.00	0.00	0.01	-0.01	0.05
favorabl	0.05	0.00	-0.03	0.02	0.01	0.01
likely	-0.03	-0.01	-0.01	0.02	0.01	0.00
probable	0.02	0.01	0.01	0.00	0.00	0.01

Expected Change for THETA-DELTA

	justlike	enjoyabl	research	meettalk	useany	entertng
justlike	- -					
enjoyabl	-0.01	- -				
research	-0.05	0.03	- -			
meettalk	-0.04	0.03	0.03	- -		
useany	0.05	-0.10	0.02	0.11	- -	
entertng	-0.05	0.04	-0.03	0.07	0.07	- -
lessefft	-0.07	0.03	0.05	0.03	-0.04	0.07
duration	-0.01	0.00	-0.01	-0.01	-0.05	0.01
signinhp	0.02	-0.01	0.05	0.01	0.03	-0.01
phonmail	0.05	-0.01	-0.02	-0.03	0.01	0.02
usesrch	0.04	0.00	0.03	0.03	0.06	-0.05
feedback	-0.06	0.01	-0.07	0.02	-0.02	0.00
usemulti	-0.01	-0.04	-0.07	0.07	0.08	0.05
staylong	-0.05	0.01	0.01	-0.02	-0.01	0.02
deeplink	-0.01	0.00	0.02	-0.10	-0.06	-0.02
buildhp	-0.01	-0.03	0.01	0.03	-0.04	-0.03
again	-0.03	-0.02	0.02	0.01	-0.03	0.02
spndtime	0.00	0.08	-0.04	0.00	0.01	0.04
bestsite	-0.01	0.01	0.01	-0.03	0.08	0.00
goodbad	0.03	-0.01	-0.03	0.04	0.05	0.00
pleasant	0.02	0.02	0.03	0.01	-0.06	-0.01
favorabl	0.00	0.02	0.03	0.01	-0.05	-0.01
likely	0.03	-0.01	-0.02	-0.04	-0.05	-0.01
probable	-0.02	0.00	0.01	0.02	0.02	0.01

Expected Change for THETA-DELTA

	lessefft	duration	signinhp	phonmail	usesrch	feedback

	lessefft	duration	signinhp	phonmail	usesrch	feedback
lessefft	- -					
duration	0.03	- -				
signinhp	-0.03	-0.08	- -			
phonmail	0.00	0.01	0.11	- -		
usesrch	0.00	0.09	0.04	0.06		
feedback	0.01	0.08	-0.06	-0.03	-0.02	- -
usemulti	-0.01	0.07	-0.06	-0.10	0.09	0.17
staylong	-0.01	-0.03	-0.03	-0.05	-0.11	0.04
deeplink	-0.02	-0.09	0.06	-0.02	-0.07	-0.02
buildhp	-0.01	0.00	0.03	-0.06	-0.03	0.08
again	-0.02	-0.02	0.01	0.05	0.01	-0.05
spndtime	0.09	-0.01	-0.04	0.05	0.02	0.03
bestsite	0.06	0.05	-0.06	0.00	0.03	-0.08
goodbad	0.01	-0.03	-0.03	0.02	0.06	-0.07
pleasant	-0.09	-0.01	0.04	0.00	-0.02	-0.02
favorabl	0.00	0.03	0.04	0.01	-0.06	0.03
likely	0.01	0.04	-0.02	0.05	0.01	0.00
probable	-0.01	-0.04	0.03	-0.06	-0.02	0.01

Expected Change for THETA-DELTA

	usemulti	staylong	deeplink	buildhp	again	spndtime
usemulti	- -					
staylong	0.07	- -				
deeplink	-0.12	0.14	- -			
buildhp	0.01	-0.03	0.05	- -		
again	-0.01	-0.02	0.01	0.04	- -	
spndtime	0.06	-0.05	-0.06	-0.03	-0.05	- -
bestsite	0.02	0.06	-0.06	-0.03	-0.06	0.19
goodbad	-0.01	-0.02	-0.01	-0.02	0.02	-0.01
pleasant	0.04	0.03	0.02	0.00	0.01	-0.03
favorabl	-0.01	-0.04	0.02	0.02	-0.02	0.00
likely	0.00	0.00	-0.02	-0.04	0.01	-0.02
probable	-0.01	0.02	0.02	0.03	0.00	0.01

Expected Change for THETA-DELTA

	bestsite	goodbad	pleasant	favorabl	likely	probable
bestsite	- -					
goodbad	0.04	- -				
pleasant	0.02	0.00	- -			
favorabl	-0.03	0.08	-0.04	- -		
likely	-0.01	0.05	-0.02	-0.03	- -	
probable	0.00	-0.05	0.01	0.03	- -	- -

Maximum Modification Index is 31.77 for Element (25,24) of THETA-DELTA

Time used: 3.624 Seconds

APPENDIX D
LISREL PRINTOUTS OF THE FINAL STRUCTURAL EQUATION MODEL

```
                        DATE: 11/24/2002
                        TIME: 10:21


                       L I S R E L  8.50

                              BY

                  Karl G. Jöreskog & Dag Sörbom



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The following lines were read from file D:\Documents and Settings\HANJUN1\My Documents\Dissertation\statistics\Lisrel\sem3.Spl:

```
Hanjun Ko: A SEM of Global Interactive Advertising, 2002
Simultaneous Equation Model #C
Observed Variables
learn passtime otherppl useful freeexps convenit justlike
enjoyabl research meettalk useany entertng lessefft
duration
signinhp phonmail usesrch
feedback usemulti staylong deeplink
buildhp again spndtime bestsite
goodbad pleasant favorabl
likely probable

Correlation Matrix from file E:uskcorr.txt

Sample Size 385
latent variables
infomtv convemtv entermtv sointmtv lduratn
hmint hhint attsite atthp purchsei
equations
useful learn research=infomtv
convenit lessefft useany=convemtv
entertng enjoyabl justlike passtime=entermtv
otherppl freeexps meettalk=sointmtv
duration=1*lduratn
deeplink staylong usemulti usesrch=hmint
feedback phonmail signinhp=hhint
buildhp again spndtime bestsite=attsite
goodbad pleasant favorabl=atthp
likely probable=purchsei
lduratn=infomtv convemtv entermtv sointmtv
hmint=lduratn infomtv convemtv entermtv sointmtv
hhint=lduratn infomtv convemtv entermtv sointmtv
attsite=lduratn hmint hhint
atthp=attsite
```

```
purchsei= atthp
let the error for hmint and hhint correlate
let the error for useful and learn correlate
let the error for bestsite and spndtime correlate
let the error for deeplink and staylong correlate
let the error for otherppl and feedback correlate
let the error for usemulti and feedback correlate
let the error variance of duration be 0
LISREL output: rs mi ef
Options ad=off

End of problem

Sample Size =   385

Hanjun Ko: A SEM of Global Interactive Advertising, 2002
```

Correlation Matrix

	duration	signinhp	phonmail	usesrch	feedback	usemulti
duration	1.00					
signinhp	- -	1.00				
phonmail	0.06	0.58	1.00			
usesrch	0.06	0.37	0.36	1.00		
feedback	0.13	0.42	0.46	0.25	1.00	
usemulti	0.03	0.29	0.25	0.48	0.37	1.00
staylong	-0.06	0.24	0.21	0.35	0.22	0.50
deeplink	-0.09	0.36	0.29	0.44	0.39	0.48
buildhp	0.05	0.43	0.39	0.25	0.39	0.32
again	0.04	0.53	0.56	0.42	0.38	0.42
spndtime	0.03	0.39	0.47	0.31	0.34	0.34
bestsite	0.06	0.29	0.34	0.35	0.19	0.35
goodbad	0.01	0.22	0.25	0.27	0.00	0.21
pleasant	- -	0.17	0.17	0.24	0.02	0.24
favorabl	0.06	0.25	0.24	0.18	0.06	0.18
likely	0.09	0.27	0.29	0.14	0.18	0.13
probable	0.06	0.30	0.27	0.14	0.20	0.14
learn	0.09	0.10	0.11	0.14	0.13	0.16
passtime	-0.04	0.03	-0.03	-0.01	0.03	0.01
otherppl	0.16	0.07	0.07	-0.16	0.28	-0.15
useful	0.03	0.08	0.04	0.02	0.07	0.06
freeexps	0.08	0.18	0.19	-0.02	0.34	-0.03
convenit	-0.06	0.06	0.07	0.12	-0.06	0.09
justlike	-0.02	0.06	0.08	0.04	-0.01	0.02
enjoyabl	-0.02	0.05	0.01	0.04	0.06	0.04
research	0.03	0.04	-0.02	0.15	-0.08	0.09
meettalk	-0.09	0.16	0.14	-0.04	0.27	-0.01
useany	-0.09	0.09	0.07	0.14	-0.01	0.15
entertng	-0.01	0.08	0.10	0.02	0.08	0.10
lessefft	-0.02	0.06	0.07	0.09	0.01	0.08

Correlation Matrix

	staylong	deeplink	buildhp	again	spndtime	bestsite
staylong	1.00					
deeplink	0.58	1.00				
buildhp	0.23	0.36	1.00			
again	0.34	0.45	0.58	1.00		
spndtime	0.20	0.27	0.39	0.55	1.00	
bestsite	0.32	0.33	0.37	0.50	0.55	1.00
goodbad	0.18	0.28	0.25	0.41	0.25	0.35
pleasant	0.21	0.29	0.21	0.32	0.17	0.27
favorabl	0.14	0.27	0.25	0.36	0.23	0.29
likely	0.14	0.14	0.25	0.43	0.25	0.25
probable	0.15	0.18	0.31	0.47	0.30	0.28
learn	0.15	0.20	0.14	0.17	0.13	0.03
passtime	0.13	0.09	0.01	0.02	-0.01	-0.09
otherppl	-0.13	-0.14	0.12	0.02	0.10	-0.07
useful	0.13	0.14	0.09	0.15	0.10	0.07

freeexps	-0.07	-0.12	0.11	0.10	0.17	-0.02
convenit	0.16	0.17	0.00	0.11	0.04	0.08
justlike	0.02	0.03	-0.01	0.03	0.10	0.00
enjoyabl	0.11	0.08	0.00	0.08	0.21	0.04
research	0.18	0.19	0.06	0.12	0.06	0.09
meettalk	-0.10	-0.18	0.14	0.11	0.16	-0.03
useany	0.12	0.09	-0.02	0.05	0.07	0.13
entertng	0.12	0.07	0.02	0.12	0.20	0.05
lessefft	0.11	0.12	0.03	0.10	0.16	0.14

Correlation Matrix

	goodbad	pleasant	favorabl	likely	probable	learn
	--------	--------	--------	--------	--------	--------
goodbad	1.00					
pleasant	0.59	1.00				
favorabl	0.76	0.52	1.00			
likely	0.44	0.27	0.38	1.00		
probable	0.44	0.30	0.42	0.89	1.00	
learn	0.17	0.14	0.23	0.08	0.13	1.00
passtime	0.08	0.04	0.07	0.00	0.03	0.10
otherppl	-0.15	-0.16	-0.14	0.16	0.10	0.51
useful	0.10	0.11	0.16	0.14	0.16	0.14
freeexps	-0.08	-0.12	-0.05	0.16	0.19	0.12
convenit	0.21	0.20	0.22	0.13	0.17	0.20
justlike	0.15	0.09	0.13	0.09	0.09	0.14
enjoyabl	0.13	0.08	0.14	0.02	0.06	0.18
research	0.14	0.12	0.18	0.03	0.07	0.32
meettalk	0.00	-0.09	0.01	0.09	0.16	0.07
useany	0.16	0.16	0.09	-0.02	0.05	0.11
entertng	0.10	0.02	0.10	0.04	0.08	0.23
lessefft	0.14	0.04	0.14	0.10	0.13	0.25

Correlation Matrix

	passtime	otherppl	useful	freeexps	convenit	justlike
	--------	--------	--------	--------	--------	--------
passtime	1.00					
otherppl	0.19	1.00				
useful	0.13	0.16	1.00			
freeexps	0.10	0.56	0.18	1.00		
convenit	0.20	-0.10	0.23	0.00	1.00	
justlike	0.35	0.10	0.19	0.21	0.22	1.00
enjoyabl	0.39	0.14	0.25	0.20	0.31	0.43
research	0.15	-0.06	0.36	-0.06	0.37	0.13
meettalk	0.12	0.49	0.02	0.55	-0.05	0.17
useany	0.07	-0.07	0.09	0.01	0.39	0.18
entertng	0.43	0.20	0.29	0.26	0.22	0.43
lessefft	0.12	-0.01	0.26	0.06	0.42	0.15

Correlation Matrix

	enjoyabl	research	meettalk	useany	entertng	lessefft
	--------	--------	--------	--------	--------	--------
enjoyabl	1.00					
research	0.28	1.00				
meettalk	0.27	0.00	1.00			
useany	0.14	0.27	0.11	1.00		
entertng	0.66	0.25	0.34	0.25	1.00	
lessefft	0.32	0.38	0.08	0.28	0.34	1.00

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Number of Iterations = 17

LISREL Estimates (Maximum Likelihood)

Measurement Equations

duration = 1.00*lduratn,, R² = 1.00

signinhp = 0.74*hhint, Errorvar.= 0.45 , R² = 0.55
           (0.044)
           10.28

phonmail = 0.78*hhint, Errorvar.= 0.39 , R² = 0.61
           (0.058)   (0.042)
           13.37   9.25

usesrch = 0.65*hmint, Errorvar.= 0.58 , R² = 0.42
          (0.051)
          11.44

feedback = 0.63*hhint, Errorvar.= 0.64 , R² = 0.39
           (0.056)   (0.052)
           11.22   12.10

usemulti = 0.70*hmint, Errorvar.= 0.53 , R² = 0.48
           (0.065)   (0.049)
           10.74   10.81

staylong = 0.61*hmint, Errorvar.= 0.63 , R² = 0.37
           (0.065)   (0.055)
           9.42   11.50

deeplink = 0.72*hmint, Errorvar.= 0.48 , R² = 0.52
           (0.067)   (0.048)
           10.82   9.98

buildhp = 0.65*attsite, Errorvar.= 0.58 , R² = 0.42
          (0.047)
          12.31

again = 0.88*attsite, Errorvar.= 0.23 , R² = 0.77
        (0.066)   (0.034)
        13.33   6.60

spndtime = 0.63*attsite, Errorvar.= 0.61 , R² = 0.39
           (0.059)   (0.049)
           10.52   12.45

bestsite = 0.58*attsite, Errorvar.= 0.66 , R² = 0.34
           (0.059)   (0.052)
           9.93   12.70

goodbad = 0.91*atthp, Errorvar.= 0.17 , R² = 0.83
          (0.034)
          5.18

pleasant = 0.64*atthp, Errorvar.= 0.59 , R² = 0.41
           (0.047)   (0.047)
           13.57   12.58

favorabl = 0.83*atthp, Errorvar.= 0.31 , R² = 0.69
           (0.045)   (0.035)
           18.44   8.89

likely = 0.92*purchsei, Errorvar.= 0.15 , R² = 0.85
                            (0.040)
                            3.66

probable = 0.96*purchsei, Errorvar.= 0.076 , R² = 0.92
           (0.050)   (0.042)
           19.30   1.79

learn = 0.46*infomtv, Errorvar.= 0.78 , R² = 0.22
        (0.059)   (0.065)
        7.81   12.05

```
passtime = 0.51*entermtv, Errorvar.= 0.74  , R² = 0.26
           (0.052)                (0.057)
            9.95                   12.88


otherppl = 0.67*sointmtv, Errorvar.= 0.52  , R² = 0.46
           (0.049)                 (0.049)
           13.58                   10.67


 useful = 0.50*infomtv, Errorvar.= 0.75  , R² = 0.25
          (0.059)               (0.064)
           8.43                  11.73


freeexps = 0.77*sointmtv, Errorvar.= 0.41  , R² = 0.59
           (0.050)                 (0.049)
           15.51                    8.37


convenit = 0.68*convemtv, Errorvar.= 0.54  , R² = 0.46
           (0.055)                 (0.059)
           12.32                    9.18


justlike = 0.54*entermtv, Errorvar.= 0.70  , R² = 0.30
           (0.051)                 (0.055)
           10.62                   12.71


enjoyabl = 0.79*entermtv, Errorvar.= 0.38  , R² = 0.62
           (0.047)                 (0.043)
           16.69                    8.94


research = 0.71*infomtv, Errorvar.= 0.49  , R² = 0.51
           (0.062)                (0.072)
           11.51                   6.84


meettalk = 0.73*sointmtv, Errorvar.= 0.47  , R² = 0.53
           (0.050)                 (0.049)
           14.46                    9.64


 useany = 0.49*convemtv, Errorvar.= 0.76  , R² = 0.24
          (0.056)                 (0.062)
           8.74                    12.17


entertng = 0.83*entermtv, Errorvar.= 0.30  , R² = 0.70
           (0.046)                 (0.042)
           17.99                    7.25


lessefft = 0.64*convemtv, Errorvar.= 0.60  , R² = 0.40
           (0.055)                 (0.058)
           11.51                   10.20



 Error Covariance for usemulti and feedback = 0.19
                                             (0.036)
                                              5.23


 Error Covariance for deeplink and staylong = 0.14
                                             (0.039)
                                              3.50


 Error Covariance for bestsite and spndtime = 0.18
                                             (0.038)
                                              4.86


 Error Covariance for otherppl and feedback = 0.12
                                             (0.034)
                                              3.44


 Error Covariance for useful and learn = 0.28
                                        (0.050)
                                         5.58


          Structural Equations
```

lduratn = 0.29*infomtv − 0.25*convemtv − 0.098*entermtv + 0.17*sointmtv, Errorvar.=
0.94 , R² = 0.062
(0.075)   (0.16)   (0.16)   (0.091)   (0.072)
12.48   2.26   -1.96   -1.08   2.71

hmint = − 0.011*lduratn + 0.31*infomtv + 0.034*convemtv + 0.049*entermtv −
0.23*sointmtv, Errorvar.= 0.83 , R² = 0.17
7
(0.14)   (0.062)   (0.17)   (0.17)   (0.098)   (0.081)
6.15   -0.18   2.22   0.20   0.51   -2.86

hhint = 0.027*lduratn − 0.028*infomtv + 0.19*convemtv − 0.10*entermtv +
0.36*sointmtv, Errorvar.= 0.87 , R² = 0.13
(0.12)   (0.061)   (0.16)   (0.17)   (0.097)   (0.081)
7.42   0.45   -0.17   2.05   -1.08   4.52

attsite = 0.032*lduratn + 0.39*hmint + 0.56*hhint, Errorvar.= 0.27 , R² = 0.73
(0.040)   (0.069)   (0.074)   (0.056)
0.80   5.74   7.65   4.78

atthp = 0.52*attsite, Errorvar.= 0.73 , R² = 0.27
(0.062)   (0.075)
8.37   9.80

purchsei = 0.53*atthp, Errorvar.= 0.72 , R² = 0.28
(0.054)   (0.070)
9.68   10.33

Error Covariance for hhint and hmint = 0.62
(0.083)
7.38

    Reduced Form Equations

lduratn = 0.29*infomtv − 0.25*convemtv − 0.098*entermtv + 0.17*sointmtv, Errorvar.=
0.94, R² = 0.062
(0.16)   (0.16)   (0.091)   (0.072)
2.26   -1.96   -1.08   2.71

hmint = 0.31*infomtv + 0.037*convemtv + 0.050*entermtv − 0.23*sointmtv, Errorvar.=
0.83, R² = 0.17
(0.16)   (0.17)   (0.097)   (0.080)
2.26   0.22   0.52   -2.92

hhint = − 0.020*infomtv + 0.18*convemtv − 0.11*entermtv + 0.37*sointmtv, Errorvar.=
0.87, R² = 0.13
(0.16)   (0.16)   (0.096)   (0.080)
-0.13   2.03   -1.11   4.62

attsite = 0.12*infomtv + 0.11*convemtv − 0.044*entermtv + 0.12*sointmtv, Errorvar.=
0.95, R² = 0.050
(0.13)   (0.14)   (0.081)   (0.069)
0.89   0.81   -0.54   1.76

atthp = 0.062*infomtv + 0.057*convemtv − 0.023*entermtv + 0.063*sointmtv, Errorvar.=
0.99, R² = 0.013
(0.069)   (0.071)   (0.042)   (0.036)
0.89   0.81   -0.54   1.74

purchsei = 0.032*infomtv + 0.030*convemtv − 0.012*entermtv + 0.033*sointmtv, Errorvar.=
1.00, R² = 0.0037
(0.036)   (0.037)   (0.022)   (0.019)
0.89   0.81   -0.54   1.72

Correlation Matrix of Independent Variables

	infomtv	convemtv	entermtv	sointmtv
infomtv	1.00			
convemtv	0.76 (0.06) 11.82	1.00		
entermtv	0.49 (0.06) 7.64	0.53 (0.06) 9.26	1.00	
sointmtv	0.05 (0.07) 0.66	0.01 (0.07) 0.18	0.41 (0.06) 7.27	1.00

Covariance Matrix of Latent Variables

	lduratn	hmint	hhint	attsite	atthp	purchsei
lduratn	1.00					
hmint	-0.03	1.00				
hhint	0.06	0.58	1.00			
attsite	0.06	0.72	0.79	1.00		
atthp	0.03	0.37	0.41	0.52	1.00	
purchsei	0.02	0.20	0.22	0.27	0.53	1.00
infomtv	0.06	0.35	0.09	0.19	0.10	0.05
convemtv	-0.08	0.29	0.12	0.18	0.09	0.05
entermtv	-0.02	0.13	0.13	0.12	0.06	0.03
sointmtv	0.14	-0.20	0.33	0.11	0.06	0.03

Covariance Matrix of Latent Variables

	infomtv	convemtv	entermtv	sointmtv
infomtv	1.00			
convemtv	0.76	1.00		
entermtv	0.49	0.53	1.00	
sointmtv	0.05	0.01	0.41	1.00

Goodness of Fit Statistics

Degrees of Freedom = 375
Minimum Fit Function Chi-Square = 711.80 (P = 0.0)
Normal Theory Weighted Least Squares Chi-Square = 712.48 (P = 0.0)
Estimated Non-centrality Parameter (NCP) = 337.48
90 Percent Confidence Interval for NCP = (265.97 ; 416.79)

Minimum Fit Function Value = 1.85
Population Discrepancy Function Value (F0) = 0.88
90 Percent Confidence Interval for F0 = (0.69 ; 1.09)
Root Mean Square Error of Approximation (RMSEA) = 0.048
90 Percent Confidence Interval for RMSEA = (0.043 ; 0.054)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.68

Expected Cross-Validation Index (ECVI) = 2.32
90 Percent Confidence Interval for ECVI = (2.14 ; 2.53)
ECVI for Saturated Model = 2.42
ECVI for Independence Model = 13.00

Chi-Square for Independence Model with 435 Degrees of Freedom = 4933.25
Independence AIC = 4993.25
Model AIC = 892.48
Saturated AIC = 930.00
Independence CAIC = 5141.85

```
                    Model CAIC = 1338.27
                Saturated CAIC = 3233.26

              Normed Fit Index (NFI) = 0.86
          Non-Normed Fit Index (NNFI) = 0.91
    Parsimony Normed Fit Index (PNFI) = 0.74
           Comparative Fit Index (CFI) = 0.93
           Incremental Fit Index (IFI) = 0.93
              Relative Fit Index (RFI) = 0.83

                Critical N (CN) = 239.25


        Root Mean Square Residual (RMR) = 0.065
                     Standardized RMR = 0.065
            Goodness of Fit Index (GFI) = 0.89
   Adjusted Goodness of Fit Index (AGFI) = 0.86
  Parsimony Goodness of Fit Index (PGFI) = 0.72
```

Hanjun Ko: A SEM of Global Interactive Advertising, 2002

Fitted Covariance Matrix

	duration	signinhp	phonmail	usesrch	feedback	usemulti
duration	1.00					
signinhp	0.05	1.00				
phonmail	0.05	0.58	1.00			
usesrch	-0.02	0.28	0.29	1.00		
feedback	0.04	0.47	0.49	0.24	1.03	
usemulti	-0.02	0.30	0.31	0.45	0.44	1.02
staylong	-0.02	0.26	0.27	0.39	0.22	0.42
deeplink	-0.02	0.31	0.32	0.47	0.26	0.50
buildhp	0.04	0.38	0.40	0.30	0.33	0.33
again	0.05	0.52	0.54	0.41	0.44	0.44
spndtime	0.04	0.37	0.39	0.29	0.31	0.31
bestsite	0.03	0.34	0.36	0.27	0.29	0.29
goodbad	0.03	0.28	0.29	0.22	0.24	0.24
pleasant	0.02	0.20	0.21	0.16	0.17	0.17
favorabl	0.02	0.25	0.27	0.20	0.22	0.22
likely	0.01	0.15	0.16	0.12	0.13	0.13
probable	0.01	0.15	0.16	0.12	0.13	0.13
learn	0.03	0.03	0.03	0.10	0.03	0.11
passtime	-0.01	0.05	0.05	0.04	0.04	0.05
otherppl	0.09	0.16	0.17	-0.09	0.25	-0.09
useful	0.03	0.03	0.03	0.11	0.03	0.12
freexpss	0.11	0.19	0.20	-0.10	0.16	-0.11
convenit	-0.05	0.06	0.06	0.13	0.05	0.14
justlike	-0.01	0.05	0.06	0.04	0.04	0.05
enjoyabl	-0.02	0.08	0.08	0.06	0.06	0.07
research	0.04	0.05	0.05	0.16	0.04	0.17
meettalk	0.10	0.18	0.18	-0.09	0.15	-0.10
useany	-0.04	0.04	0.04	0.09	0.04	0.10
entertng	-0.02	0.08	0.08	0.07	0.07	0.07
lessefft	-0.05	0.05	0.06	0.12	0.05	0.13

Fitted Covariance Matrix

	staylong	deeplink	buildhp	again	spndtime	bestsite
staylong	1.00					
deeplink	0.58	1.00				
buildhp	0.28	0.34	1.00			
again	0.38	0.46	0.57	1.00		
spndtime	0.27	0.32	0.41	0.55	1.00	
bestsite	0.26	0.30	0.38	0.51	0.55	1.00
goodbad	0.21	0.24	0.31	0.41	0.29	0.28
pleasant	0.15	0.17	0.22	0.29	0.21	0.19
favorabl	0.19	0.22	0.28	0.38	0.27	0.25
likely	0.11	0.13	0.16	0.22	0.16	0.15
probable	0.11	0.14	0.17	0.23	0.16	0.15

phonmail	0.01	0.00	0.00			
usesrch	0.08	0.10	0.07	0.00		
feedback	0.09	-0.04	-0.03	0.01	-0.03	
usemulti	0.04	-0.01	-0.07	0.03	-0.07	-0.02
staylong	-0.05	-0.02	-0.06	-0.05	0.00	0.08
deeplink	-0.07	0.06	-0.03	-0.02	-0.03	-0.03
buildhp	0.02	0.05	-0.01	-0.03	0.06	-0.01
again	-0.01	0.01	0.02	0.01	-0.06	-0.02
spndtime	-0.01	0.02	0.08	0.02	0.03	0.02
bestsite	0.02	-0.06	-0.02	0.08	-0.10	0.05
goodbad	-0.01	-0.06	-0.04	0.05	-0.23	-0.03
pleasant	-0.02	-0.02	-0.04	0.09	-0.15	0.07
favorabl	0.03	0.00	-0.02	-0.02	-0.16	-0.03
likely	0.08	0.12	0.14	0.11	0.02	0.00
probable	0.04	0.15	0.11	0.08	0.07	0.01
learn	0.06	0.07	0.08	0.04	0.11	0.04
passtime	-0.03	-0.02	-0.08	-0.05	-0.01	-0.04
otherppl	0.06	-0.10	-0.10	-0.07	0.03	-0.05
useful	0.00	0.05	0.00	-0.09	0.04	-0.06
freeexps	-0.02	-0.01	0.00	0.08	0.18	0.07
convenit	0.00	0.00	0.01	-0.01	-0.11	-0.05
justlike	-0.01	0.01	0.02	0.00	-0.05	-0.03
enjoyabl	0.00	-0.02	-0.02	-0.02	-0.01	-0.03
research	-0.02	-0.01	-0.07	-0.01	-0.11	-0.09
meettalk	-0.01	-0.02	-0.04	0.06	0.12	0.09
useany	-0.05	0.05	0.03	0.05	-0.05	0.05
entertng	0.01	0.00	0.02	-0.05	0.01	0.02
lessefft	0.03	0.00	0.01	-0.03	-0.04	-0.05

Fitted Residuals

	staylong	deeplink	buildhp	again	spndtime	bestsite
staylong	0.00					
deeplink	0.00	0.00				
buildhp	-0.06	0.02	0.00			
again	-0.05	-0.01	0.01	0.00		
spndtime	-0.08	-0.06	-0.02	0.00	0.00	
bestsite	0.07	0.03	-0.01	0.00	-0.05	0.00
goodbad	-0.03	0.04	-0.06	0.00	-0.05	0.08
pleasant	0.07	0.11	-0.01	0.03	-0.04	0.08
favorabl	-0.05	0.04	-0.03	-0.01	-0.04	0.04
likely	0.03	0.01	0.09	0.21	0.09	0.10
probable	0.04	0.04	0.14	0.24	0.13	-0.02
learn	0.05	0.09	0.09	0.09	0.07	-0.12
passtime	0.09	0.05	-0.03	-0.03	-0.05	-0.11
otherppl	-0.05	-0.05	0.07	-0.04	0.06	0.02
useful	0.03	0.02	0.03	0.07	0.04	-0.07
freeexps	0.02	-0.01	0.05	0.03	0.12	0.01
convenit	0.03	0.02	-0.08	0.00	-0.03	-0.04
justlike	-0.02	-0.02	-0.05	-0.03	0.06	0.08
enjoyabl	0.05	0.00	-0.06	-0.01	0.15	0.01
research	0.03	0.01	-0.03	0.00	0.11	-0.08
meettalk	-0.02	-0.08	0.08	0.04	0.02	0.08
useany	0.03	-0.02	-0.08	-0.02	0.13	-0.01
entertng	0.06	0.00	-0.05	0.03	0.13	0.07
lessefft	0.00	-0.02	-0.05	0.00	0.09	0.07

Fitted Residuals

	goodbad	pleasant	favorabl	likely	probable	learn
goodbad	0.00					
pleasant	0.01	0.00				
favorabl	0.01	-0.01	0.00			
likely	0.00	-0.04	-0.02	0.00		
probable	-0.02	-0.02	0.00	0.00	0.00	
learn	0.13	0.11	0.19	0.06	0.11	0.00
passtime	0.05	0.01	0.05	-0.02	0.01	-0.01
otherppl	-0.19	-0.19	-0.17	0.04	0.08	0.13
useful	0.06	0.08	0.12	0.11	0.13	0.00

freeexps	-0.12	-0.15	-0.08	0.14	0.17	0.11
convenit	0.15	0.16	0.17	0.10	0.14	-0.04
justlike	0.11	0.07	0.10	0.07	0.07	0.02
enjoyabl	0.08	0.05	0.10	0.00	0.03	0.00
research	0.08	0.07	0.12	-0.01	0.03	-0.01
meettalk	-0.04	-0.11	-0.02	0.07	0.13	0.05
useany	0.12	0.13	0.06	-0.04	0.02	-0.06
entertng	0.05	-0.01	0.06	0.02	0.06	0.04
lessefft	0.08	0.00	0.09	0.07	0.10	0.03

Fitted Residuals

	passtime	otherppl	useful	freeexps	convenit	justlike
	--------	--------	--------	--------	--------	--------
passtime	0.00					
otherppl	0.05	0.03				
useful	0.00	0.14	0.00			
freeexps	-0.06	0.05	0.16	0.00		
convenit	0.01	-0.10	-0.02	-0.01	0.00	
justlike	0.07	-0.05	0.06	0.04	0.03	0.00
enjoyabl	-0.01	-0.07	0.06	-0.04	0.02	0.00
research	-0.03	-0.08	0.01	-0.09	0.00	-0.06
meettalk	-0.03	0.01	0.01	-0.01	-0.06	0.00
useany	-0.07	-0.07	-0.10	0.01	0.05	0.04
entertng	0.00	-0.03	0.09	0.00	-0.08	-0.02
lessefft	-0.06	-0.02	0.02	0.05	-0.02	-0.03

Fitted Residuals

	enjoyabl	research	meettalk	useany	entertng	lessefft
	--------	--------	--------	--------	--------	--------
enjoyabl	0.00					
research	0.00	0.00				
meettalk	0.04	-0.02	0.00			
useany	-0.06	0.00	0.10	0.00		
entertng	0.00	-0.04	0.10	0.03	0.00	
lessefft	0.06	0.00	0.08	-0.03	0.06	0.00

Summary Statistics for Fitted Residuals

```
Smallest Fitted Residual =    -0.23
  Median Fitted Residual =     0.00
 Largest Fitted Residual =     0.24
```

Stemleaf Plot

```
-22|4
-20|
-18|86
-16|2
-14|721
-12|2
-10|95535320
- 8|7520543110
- 6|9876332888877743332110
- 4|9876654431111098887777776655432110
- 2|9988776544444333209999988877776565554444433333333222111
- 0|999999877766665444422211100009988877776666433322221111111111110000000000+23
  0|11112223334455556666777788900112334445556668889
  2|0001123344555566677789999999901122456666889
  4|0011222345567788899000011233445555566677788899
  6|1223699990012223444455566778889
  8|00112235667777888889245679
 10|1224667892335577
 12|14457923345677
 14|2301359
 16|779
 18|8
 20|0
 22|6
```

Standardized Residuals

	duration	signinhp	phonmail	usesrch	feedback	usemulti
duration	- -					
signinhp	-1.70	- -				
phonmail	0.24	0.43	- -			
usesrch	2.31	2.85	2.25	- -		
feedback	2.34	-2.01	-1.50	0.31	-2.74	
usemulti	1.43	-0.20	-2.26	1.28	-2.93	-2.15
staylong	-1.28	-0.54	-1.86	-1.99	-0.05	3.36
deeplink	-2.41	1.88	-1.01	-1.32	-0.93	-1.54
buildhp	0.45	1.70	-0.53	-0.76	1.72	-0.30
again	-0.53	0.59	1.35	0.57	-2.64	-1.03
spndtime	-0.17	0.59	2.90	0.44	0.83	0.71
bestsite	0.58	-1.79	-0.58	2.09	-2.85	1.54
goodbad	-0.31	-1.72	-1.29	1.25	-5.90	-0.69
pleasant	-0.40	-0.54	-0.90	1.96	-3.35	1.68
favorabl	0.70	-0.07	-0.65	-0.55	-3.79	-0.78
likely	1.54	2.61	3.07	0.42	1.18	-0.03
probable	0.84	3.38	2.42	0.44	1.48	0.18
learn	1.52	1.67	1.85	0.83	2.31	1.03
passtime	-0.81	-0.48	-1.80	-1.02	-0.30	-0.83
otherppl	2.00	-2.66	-2.87	-1.77	0.96	-1.37
useful	-0.03	1.13	0.05	-2.16	0.93	-1.46
freeexps	-0.94	-0.22	-0.08	2.05	4.59	1.96
convenit	-0.03	-0.02	0.30	-0.15	-2.51	-1.30
justlike	-0.16	0.20	0.57	-0.03	-1.12	-0.63
enjoyabl	-0.06	-0.70	-0.72	-0.62	-0.14	-0.72
research	-0.87	-0.25	-1.21	-0.40	-2.88	-2.54
meettalk	-0.51	-0.46	-1.19	1.45	3.07	2.27
useany	-1.13	1.15	0.61	1.08	-1.03	1.21
entertng	0.58	0.11	0.60	-1.34	0.34	0.67
lessefft	0.92	0.11	0.20	-0.73	-0.90	-1.39

Standardized Residuals

	staylong	deeplink	buildhp	again	spndtime	bestsite
staylong	- -					
deeplink	- -	- -				
buildhp	-1.66	0.63	- -			
again	-1.85	-0.39	0.68	- -		
spndtime	-2.10	-1.77	-0.74	-0.39	- -	
bestsite	1.83	0.85	-0.32	-0.94	- -	- -
goodbad	-0.70	1.01	-1.74	-0.11	-1.37	2.31
pleasant	1.45	2.60	-0.25	0.93	-0.85	1.84
favorabl	-1.21	1.06	-0.73	-0.62	-1.01	0.96
likely	0.53	0.25	1.95	5.40	2.07	2.25
probable	0.86	0.88	3.29	6.18	3.06	2.89
learn	1.15	2.07	1.85	2.16	1.58	-0.48
passtime	1.88	1.06	-0.69	-0.74	-1.07	-2.52
otherppl	-1.22	-1.24	1.72	-1.21	1.26	0.44
useful	0.64	0.38	0.66	1.66	0.96	-1.56
freeexps	0.48	-0.34	1.27	0.90	2.75	0.15
convenit	0.86	0.70	-1.87	-0.01	-0.78	-0.77
justlike	-0.51	-0.48	-1.02	-0.60	1.29	-0.77
enjoyabl	1.28	0.13	-1.38	-0.19	3.41	-0.36
research	0.67	0.44	-0.67	0.10	-0.56	0.34
meettalk	-0.45	-2.21	1.92	1.13	2.44	-1.75
useany	0.64	-0.44	-1.65	-0.57	0.37	1.66
entertng	1.52	-0.02	-1.17	0.78	3.10	-0.24
lessefft	0.01	-0.42	-1.04	-0.08	1.96	1.52

Standardized Residuals

	goodbad	pleasant	favorabl	likely	probable	learn
goodbad	- -					
pleasant	1.08	- -				
favorabl	2.50	-0.90	- -			

likely	-0.10	-1.29	-1.22	- -		
probable	-2.11	-0.79	0.07	- -	- -	
learn	2.56	2.27	3.82	1.13	2.15	- -
passtime	0.98	0.28	0.93	-0.33	0.21	-0.26
otherpp1	-4.03	-3.83	-3.64	0.80	1.59	2.85
useful	1.14	1.63	2.54	2.22	2.62	- -
freeexps	-2.57	-3.11	-1.76	2.76	3.38	2.45
convenit	3.25	3.17	3.50	1.99	2.76	-1.23
justlike	2.34	1.44	2.07	1.37	1.40	0.49
enjoyabl	1.76	0.98	2.17	-0.06	0.64	0.04
research	1.67	1.53	2.59	-0.18	0.69	-0.61
meettalk	-0.83	-2.31	-0.46	1.46	2.71	1.16
useany	2.36	2.66	1.14	-0.82	0.49	-1.63
entertng	1.16	-0.20	1.23	0.33	1.11	1.00
lessefft	1.72	-0.04	1.79	1.41	1.91	0.87

Standardized Residuals

	passtime	otherpp1	useful	freeexps	convenit	justlike
passtime	- -					
otherpp1	1.18	3.83				
useful	0.07	3.25	- -			
freeexps	-1.52	3.86	3.78	- -		
convenit	0.32	-2.67	-0.74	-0.31	- -	
justlike	2.21	-1.21	1.31	0.94	0.69	- -
enjoyabl	-0.58	-2.13	1.72	-1.43	0.86	0.03
research	-0.72	-2.26	0.61	-3.00	0.09	-1.45
meettalk	-0.81	0.38	0.14	-0.86	-1.51	0.12
useany	-1.52	-1.65	-2.52	0.17	2.50	0.96
entertng	0.02	-0.92	2.62	-0.03	-3.22	-1.37
lessefft	-1.38	-0.49	0.73	1.48	-1.20	-0.69

Standardized Residuals

	enjoyabl	research	meettalk	useany	entertng	lessefft
enjoyabl	- -					
research	0.05	- -				
meettalk	1.31	-0.65	- -			
useany	-1.64	-0.07	2.32	- -		
entertng	0.53	-1.88	3.26	0.85	- -	
lessefft	1.82	1.58	2.01	-1.34	2.01	- -

Summary Statistics for Standardized Residuals

```
Smallest Standardized Residual =    -5.90
  Median Standardized Residual =     0.02
 Largest Standardized Residual =     6.18
```

Stemleaf Plot

```
- 5|9
- 4|0
- 3|8864210
- 2|99887766655554333222111100
- 1|99998888877777766655555544444444333333322222222221110000000
- 0|999999999988888888777777777777776666666666555555555555444444444333333+68
  0|11111111112222222333333344444444555556666666666777777777888888999+09
  1|00000000011111111111222222233333334444444455555555566667777777777888888+05
  2|0000000001111122222333333333444555566666667788888899
  3|111112233344458889
  4|6
  5|4
  6|2
```

Largest Negative Standardized Residuals

```
Residual for feedback and feedback  -2.74
Residual for usemulti and feedback  -2.93
Residual for    again and feedback  -2.64
Residual for bestsite and feedback  -2.85
Residual for  goodbad and feedback  -5.90
```

```
Residual for pleasant and feedback   -3.35
Residual for favorabl and feedback   -3.79
Residual for otherppl and signinhp   -2.66
Residual for otherppl and phonmail   -2.87
Residual for otherppl and  goodbad   -4.03
Residual for otherppl and pleasant   -3.83
Residual for otherppl and favorabl   -3.64
Residual for freeexps and pleasant   -3.11
Residual for convenit and otherppl   -2.67
Residual for research and feedback   -2.88
Residual for research and freeexps   -3.00
Residual for entertng and convenit   -3.22
```
Largest Positive Standardized Residuals
```
Residual for  usesrch and signinhp    2.85
Residual for  staylong and usemulti   3.36
Residual for  spndtime and phonmail   2.90
Residual for  pleasant and deeplink   2.60
Residual for    likely and signinhp   2.61
Residual for    likely and phonmail   3.07
Residual for    likely and     again  5.40
Residual for  probable and signinhp   3.38
Residual for  probable and  buildhp   3.29
Residual for  probable and     again  6.18
Residual for  probable and spndtime   3.06
Residual for  probable and bestsite   2.89
Residual for     learn and favorabl   3.82
Residual for  otherppl and    learn   2.85
Residual for  otherppl and otherppl   3.83
Residual for    useful and probable   2.62
Residual for    useful and otherppl   3.25
Residual for  freeexps and feedback   4.59
Residual for  freeexps and spndtime   2.75
Residual for  freeexps and    likely  2.76
Residual for  freeexps and probable   3.38
Residual for  freeexps and otherppl   3.86
Residual for  freeexps and   useful   3.78
Residual for  convenit and  goodbad   3.25
Residual for  convenit and pleasant   3.17
Residual for  convenit and favorabl   3.50
Residual for  convenit and probable   2.76
Residual for  enjoyabl and spndtime   3.41
Residual for  research and favorabl   2.59
Residual for  meettalk and feedback   3.07
Residual for  meettalk and probable   2.71
Residual for    useany and pleasant   2.66
Residual for  entertng and spndtime   3.10
Residual for  entertng and   useful   2.62
Residual for  entertng and meettalk   3.26
```

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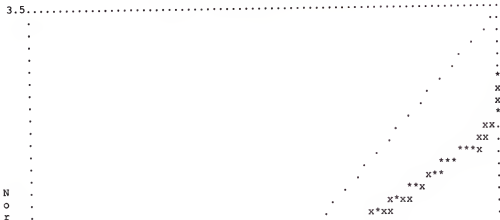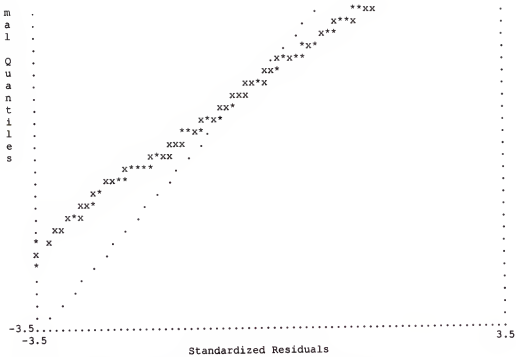
Qplot of Standardized Residuals

```
m   .                                            **xx           .
a   .                                     .   x***x             .
l   .                                         x**               .
Q   .                                     .*x*                  .
u   .                                   .x*x**                  .
a   .                                  xx*                      .
n   .                                 xx*x                      .
t   .                               xxx                         .
i   .                             x*x*                          .
l   .                           **x*.                           .
e   .                          xxx .                            .
s   .                        x*xx .                             .
    .                      x****.                               .
    .                    xx**  .                                .
    .            x*      .                                      .
    .           xx*  .                                          .
    .          x*x  .                                           .
    .       xx   .                                              .
    .  * x      .                                               .
    . x        .                                                .
    . *       .                                                 .
    .        .                                                  .
    .       .                                                   .
-3.5...................................................         .
 -3.5                                                        3.5
                      Standardized Residuals
```

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Modification Indices and Expected Change

      The Modification Indices Suggest to Add the

Path to	from	Decrease in Chi-Square	New Estimate
usesrch	hhint	8.2	0.19
feedback	atthp	15.8	-0.19
again	purchsei	17.5	0.15
spndtime	hhint	12.6	0.33
bestsite	hmint	10.4	0.25
bestsite	hmint	11.6	-0.33
goodbad	hhint	10.8	-0.14
probable	attsite	10.3	0.10

Modification Indices for LAMBDA-Y

	lduratn	hmint	hhint	attsite	atthp	purchsei
duration	- -	- -	- -	2.48	0.39	0.33
signinhp	2.88	5.30	- -	1.31	0.38	0.52
phonmail	0.06	0.32	- -	1.23	0.63	0.11
usesrch	5.35	- -	8.25	2.57	0.04	0.43
feedback	2.95	4.61	- -	6.92	15.78	0.40
usemulti	0.63	- -	1.64	0.01	0.06	1.08
staylong	0.52	- -	2.82	4.40	2.93	0.00
deeplink	3.87	- -	0.02	0.17	1.08	0.25
buildhp	0.20	1.86	2.88	- -	1.16	0.03
again	0.29	0.78	0.03	- -	1.70	17.52
spndtime	0.12	3.86	12.58	- -	3.20	0.00
bestsite	0.41	10.36	11.58	- -	7.53	0.17
goodbad	1.24	0.08	10.76	4.42	- -	2.25
pleasant	0.31	7.78	0.22	0.55	- -	0.99
favorabl	1.37	0.85	0.09	1.14	- -	0.14
likely	2.95	0.36	0.19	0.08	- -	- -
probable	0.99	1.59	6.38	10.28	- -	- -

Expected Change for LAMBDA-Y

	lduratn	hmint	hhint	attsite	atthp	purchsei

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duration	- -	- -	- -	-1.62	0.04	0.03
signinhp	-0.07	0.15	- -	0.13	0.03	0.03
phonmail	0.01	-0.04	- -	0.13	0.04	-0.01
usesrch	0.10	- -	0.19	0.14	0.01	-0.03
feedback	0.07	-0.15	- -	-0.27	-0.19	-0.03
usemulti	0.03	- -	-0.09	-0.01	-0.01	-0.04
staylong	-0.03	- -	-0.10	-0.17	-0.08	0.00
deeplink	-0.08	- -	0.01	0.03	0.05	-0.02
buildhp	0.02	-0.11	0.17	- -	-0.06	0.01
again	-0.02	-0.07	0.02	- -	0.06	0.15
spndtime	-0.01	-0.15	0.33	- -	-0.09	0.00
bestsite	0.03	0.25	-0.33	- -	0.14	0.02
goodbad	-0.03	-0.01	-0.14	-0.10	- -	-0.07
pleasant	-0.02	0.14	-0.02	0.04	- -	-0.05
favorbl	0.04	-0.04	-0.01	-0.05	- -	- -
likely	0.04	-0.02	0.01	-0.01	- -	- -
probable	-0.02	0.04	0.07	0.10	- -	- -

The Modification Indices Suggest to Add the

Path to	from	Decrease in Chi-Square	New Estimate
research	sointmtv	15.9	-0.29

Modification Indices for LAMBDA-X

	infomtv	convemtv	entermtv	sointmtv
learn	- -	0.92	0.01	2.23
passtime	0.60	0.89	- -	0.76
otherppl	0.69	4.35	3.04	- -
useful	- -	0.05	6.04	5.93
freeexps	0.01	0.31	0.57	- -
convenit	0.80	- -	2.61	4.25
justlike	0.21	0.01	- -	0.05
enjoyabl	1.01	1.47	- -	1.64
research	- -	2.76	6.89	15.89
meettalk	0.47	1.86	5.95	- -
useany	1.88	- -	0.06	0.13
entertng	0.06	0.48	- -	2.47
lessefft	4.44	- -	3.47	3.44

Expected Change for LAMBDA-X

	infomtv	convemtv	entermtv	sointmtv
learn	- -	-0.12	-0.01	0.07
passtime	-0.05	-0.07	- -	-0.05
otherppl	-0.04	-0.10	-0.09	- -
useful	- -	0.03	-0.04	- -
freeexps	0.00	- -	-0.13	-0.12
convenit	-0.15	0.01	- -	0.01
justlike	-0.03	0.08	- -	-0.06
enjoyabl	0.06	0.45	-0.26	-0.29
research	- -	0.07	0.13	- -
meettalk	0.03	- -	-0.02	0.02
useany	-0.19	-0.04	- -	0.08
entertng	-0.02		0.14	0.10
lessefft	0.33			

The Modification Indices Suggest to Add the

Path to	from	Decrease in Chi-Square	New Estimate
attsite	purchsei	16.6	0.19
atthp	hhint	10.9	-0.38
atthp	purchsei	32.0	-0.67
purchsei	hhint	31.8	0.32
purchsei	attsite	32.0	0.34

Modification Indices for BETA

	lduratn	hmint	hhint	attsite	atthp	purchsei
lduratn	- -	- -	- -	2.21	0.40	0.64

```
     hmint        - -        - -        - -       0.04       0.01       0.03
     hhint        - -        - -        - -       0.09       1.49       6.11
     attsite      - -        - -        - -        - -       1.48      16.56
     atthp       0.01       4.72      10.90        - -        - -      32.02
     purchsei    1.48       1.73      31.79      32.02        - -        - -
```

                    Expected Change for BETA

	lduratn	hmint	hhint	attsite	atthp	purchsei
lduratn	- -	- -	- -	-1.42	0.04	0.04
hmint	- -	- -	- -	-0.05	0.01	-0.01
hhint	- -	- -	- -	-0.07	-0.08	0.13
attsite	- -	- -	- -	- -	0.08	0.19
atthp	0.00	0.20	-0.38	- -	- -	-0.67
purchsei	0.06	0.07	0.32	0.34	- -	- -

         The Modification Indices Suggest to Add the
Path to   from   Decrease in Chi-Square   New Estimate
atthp   informtv   13.8   0.22
atthp   convemtv   17.0   0.24
purchsei sointmtv   22.7   0.25

              Modification Indices for GAMMA

	informtv	convemtv	entermtv	sointmtv
lduratn	- -	- -	- -	- -
hmint	- -	- -	- -	- -
hhint	- -	- -	- -	- -
attsite	2.14	0.53	0.47	1.05
atthp	13.84	16.97	3.91	7.60
purchsei	0.09	0.19	0.26	22.71

              Expected Change for GAMMA

	informtv	convemtv	entermtv	sointmtv
lduratn	- -	- -	- -	- -
hmint	- -	- -	- -	- -
hhint	- -	- -	- -	- -
attsite	0.08	0.04	0.03	0.06
atthp	0.22	0.24	0.11	-0.15
purchsei	0.02	0.02	0.03	0.25

No Non-Zero Modification Indices for PHI

The Modification Indices Suggest to Add an Error Covariance
Between   and   Decrease in Chi-Square   New Estimate
purchsei hhint   11.3   0.15
purchsei attsite   16.2   0.15
purchsei atthp   32.0   -0.48

              Modification Indices for PSI

	lduratn	hmint	hhint	attsite	atthp	purchsei
lduratn	- -					
hmint	- -	- -				
hhint	- -	- -	- -			
attsite	2.21	0.04	0.09	- -		
atthp	0.47	0.02	1.45	1.48	- -	
purchsei	0.36	0.06	11.28	16.18	32.02	- -

              Expected Change for PSI

	lduratn	hmint	hhint	attsite	atthp	purchsei
lduratn	- -					
hmint	- -	- -				
hhint	- -	- -	- -			

```
attsite    -0.38    -0.01    -0.02     - -
atthp       0.03     0.01    -0.06     0.06     - -
purchsei    0.03    -0.01     0.15     0.15    -0.48     - -
```

The Modification Indices Suggest to Add an Error Covariance

```
 Between     and    Decrease in Chi-Square   New Estimate
staylong   usemulti          11.0               0.12
goodbad    feedback           9.7              -0.07
likely     phonmail           9.6               0.05
probable   phonmail          11.3              -0.06
probable   goodbad           11.4              -0.05
otherppl   passtime          10.0               0.11
freeexps   feedback           8.3               0.10
meettalk   deeplink          10.2              -0.09
meettalk   useful            10.5              -0.11
useany     enjoyabl           8.5              -0.10
useany     meettalk           9.0               0.11
enterntng  convenit          15.8              -0.12
```

Modification Indices for THETA-EPS

	duration	signinhp	phonmail	usesrch	feedback	usemulti
duration	2.48					
signinhp	2.32	- -				
phonmail	0.36	0.18	- -			
usesrch	4.55	1.05	2.12	- -		
feedback	1.68	0.75	0.37	0.22	- -	
usemulti	0.87	0.27	6.15	2.42	- -	- -
staylong	0.27	0.84	0.81	2.69	1.35	11.01
deeplink	3.91	3.60	0.56	0.51	0.17	4.39
buildhp	0.02	1.10	4.36	1.17	5.02	0.01
again	0.73	0.01	1.60	0.32	1.36	0.02
spndtime	0.37	0.34	4.04	0.04	1.37	1.46
bestsite	1.50	1.13	0.01	0.44	4.06	0.93
goodbad	0.28	1.77	0.68	3.52	9.71	0.01
pleasant	0.02	0.03	0.24	0.16	1.08	1.86
favorabl	1.23	2.32	0.03	5.29	0.67	0.41
likely	3.25	1.66	9.61	0.20	0.01	0.00
probable	2.33	2.23	11.30	0.78	0.38	0.29

Modification Indices for THETA-EPS

	staylong	deeplink	buildhp	again	spndtime	bestsite
staylong	- -					
deeplink	- -	- -				
buildhp	1.02	3.73	- -			
again	0.23	0.00	0.46	- -		
spndtime	2.33	1.31	0.42	0.01	- -	
bestsite	5.53	0.35	0.01	0.64		- -
goodbad	0.16	0.07	2.13	0.04	1.32	5.65
pleasant	0.68	0.42	0.03	0.04	1.53	0.90
favorabl	1.83	1.53	0.40	1.72	0.07	0.58
likely	0.03	1.36	3.82	1.16	0.94	0.08
probable	0.08	0.25	5.00	1.27	2.01	0.04

Modification Indices for THETA-EPS

	goodbad	pleasant	favorabl	likely	probable
goodbad	- -				
pleasant	1.17	- -			
favorabl	6.25	0.81	- -		
likely	7.77	1.31	4.86	- -	
probable	11.38	0.33	3.73	- -	- -

Expected Change for THETA-EPS

	duration	signinhp	phonmail	usesrch	feedback	usemulti

	duration	signinhp	phonmail	usesrch	feedback	usemulti
duration	13.39					
signinhp	-0.06	- -				
phonmail	0.03	0.02				
usesrch	0.09	0.03	0.05	- -		
feedback	0.05	-0.03	0.02	0.02	- -	
usemulti	0.04	-0.02	-0.08	0.06	0.04	- -
staylong	-0.02	-0.03	-0.03	-0.06	0.04	0.12
deeplink	-0.08	0.05	-0.02	-0.03	0.01	-0.07
buildhp	-0.01	0.03	-0.06	-0.04	0.07	0.00
again	-0.03	0.00	0.03	-0.02	-0.03	0.00
spndtime	-0.02	-0.02	0.06	0.01	0.04	0.04
bestsite	0.05	-0.03	0.00	0.02	-0.06	0.03
goodbad	-0.02	-0.03	0.02	0.05	-0.07	0.00
pleasant	-0.01	0.01	-0.01	0.01	-0.03	0.04
favorabl	0.04	0.04	0.00	-0.06	0.02	-0.02
likely	0.04	-0.02	0.05	0.01	0.00	0.00
probable	-0.03	0.03	-0.06	-0.02	0.01	-0.01

Expected Change for THETA-EPS

	staylong	deeplink	buildhp	again	spndtime	bestsite
staylong	- -					
deeplink	- -	- -				
buildhp	-0.03	0.06	- -			
again	-0.01	0.00	0.02			
spndtime	-0.05	-0.03	-0.02	0.00	- -	
bestsite	0.07	-0.02	0.00	-0.02	- -	- -
goodbad	-0.01	-0.01	-0.04	0.00	-0.03	0.06
pleasant	0.03	0.02	-0.01	0.01	-0.04	0.03
favorabl	-0.03	0.03	0.02	-0.03	0.01	-0.02
likely	0.00	-0.02	0.04	-0.04	0.02	-0.01
probable	0.01	0.03	0.04	0.02	0.03	0.00

Expected Change for THETA-EPS

	goodbad	pleasant	favorabl	likely	probable
goodbad	- -				
pleasant	0.04	- -			
favorabl	0.15	-0.03	- -		
likely	0.04	-0.02	-0.03	- -	
probable	-0.05	0.01	0.03	- -	- -

Modification Indices for THETA-DELTA-EPS

	duration	signinhp	phonmail	usesrch	feedback	usemulti
learn	1.72	0.49	0.36	1.17	1.01	0.53
passtime	0.42	0.56	2.35	0.51	0.05	0.94
otherppl	1.58	0.61	1.83	4.20	- -	1.20
useful	0.93	0.12	1.78	5.75	0.28	1.64
freeexps	0.81	0.04	0.04	2.10	8.34	0.03
convenit	0.08	0.01	1.43	0.02	1.45	0.34
justlike	0.01	0.24	1.83	0.95	2.03	0.00
enjoyabl	0.01	0.32	0.12	0.03	0.75	2.09
research	0.15	0.64	1.12	0.15	1.94	3.68
meettalk	0.07	0.09	1.80	0.73	0.69	4.21
useany	1.05	1.08	0.17	2.08	1.11	5.68
entertng	0.10	0.20	0.83	2.48	0.14	3.19
lessefft	0.30	0.38	0.00	0.01	0.36	0.40

Modification Indices for THETA-DELTA-EPS

	staylong	deeplink	buildhp	again	spndtime	bestsite
learn	0.43	1.31	1.25	0.20	0.75	7.37
passtime	2.55	2.31	0.63	0.15	4.11	2.64
otherppl	0.18	2.47	5.64	0.02	0.26	0.06
useful	0.51	0.09	0.02	2.17	- -	0.13
freeexps	0.32	0.15	0.31	0.08	0.57	0.23

convenit	0.00	0.22	1.39	0.26	4.10	0.00
justlike	1.69	0.00	0.14	1.29	0.05	0.17
enjoyabl	0.16	0.00	0.80	0.77	7.06	0.13
research	0.00	0.31	0.21	0.76	1.76	0.34
meettalk	0.00	10.17	0.72	0.25	0.28	1.03
useany	0.07	2.44	1.84	2.54	0.25	3.55
entertng	0.51	0.42	1.25	0.63	1.30	0.01
lessefft	0.09	0.09	0.03	0.49	3.84	0.73

Modification Indices for THETA-DELTA-EPS

	goodbad	pleasant	favorabl	likely	probable
learn	0.06	0.00	2.48	2.49	1.53
passtime	0.52	0.01	0.00	0.19	0.00
otherppl	0.17	0.00	3.18	0.32	0.99
useful	3.46	0.08	0.48	1.55	0.00
freeexps	2.70	0.47	0.13	0.72	0.59
convenit	0.00	2.06	0.66	0.01	0.30
justlike	1.29	0.33	0.00	1.57	1.18
enjoyabl	0.00	0.53	1.33	0.16	0.23
research	0.13	0.01	1.65	0.88	0.05
meettalk	0.83	0.81	0.06	4.45	4.03
useany	3.24	3.42	3.58	5.77	2.22
entertng	0.02	1.68	0.18	0.05	0.06
lessefft	0.24	6.76	0.22	0.47	0.00

Expected Change for THETA-DELTA-EPS

	duration	signinhp	phonmail	usesrch	feedback	usemulti
learn	0.06	−0.02	0.02	0.04	0.03	0.02
passtime	−0.03	0.03	−0.05	−0.03	0.01	−0.03
otherppl	0.05	−0.02	−0.04	−0.07	− −	−0.04
useful	−0.04	0.01	−0.04	−0.08	0.02	−0.04
freeexps	−0.04	−0.01	−0.01	0.05	0.10	0.01
convenit	0.01	0.00	0.04	0.01	−0.04	−0.02
justlike	0.00	0.02	0.04	0.04	−0.05	0.00
enjoyabl	0.00	−0.02	−0.01	0.01	0.03	−0.04
research	−0.03	0.03	−0.03	0.01	−0.05	−0.07
meettalk	−0.01	0.01	−0.04	0.03	0.03	0.06
useany	−0.05	0.04	0.01	0.06	−0.04	0.09
entertng	0.01	−0.01	0.02	−0.05	−0.01	0.05
lessefft	0.03	−0.02	0.00	0.00	0.02	−0.02

Expected Change for THETA-DELTA-EPS

	staylong	deeplink	buildhp	again	spndtime	bestsite
learn	−0.02	0.04	0.04	−0.01	0.03	−0.09
passtime	0.06	0.05	0.03	0.01	−0.07	−0.06
otherppl	−0.01	0.05	0.08	0.00	0.02	−0.01
useful	0.02	0.01	0.00	0.04	− −	0.01
freeexps	0.02	−0.01	−0.02	−0.01	0.02	−0.01
convenit	0.00	0.01	−0.04	0.01	−0.07	0.00
justlike	−0.05	0.00	−0.01	−0.03	0.01	−0.01
enjoyabl	0.01	0.00	−0.03	−0.02	0.07	−0.01
research	0.00	0.02	0.02	0.02	−0.04	0.02
meettalk	0.00	−0.09	0.03	0.01	0.02	−0.03
useany	0.01	0.00	−0.05	−0.05	−0.02	0.07
entertng	0.02	−0.02	−0.03	0.02	0.03	0.00
lessefft	−0.01	−0.01	−0.01	−0.02	0.07	0.03

Expected Change for THETA-DELTA-EPS

	goodbad	pleasant	favorabl	likely	probable
learn	−0.01	0.00	0.04	−0.03	0.02
passtime	0.02	0.00	0.00	−0.01	0.00
otherppl	−0.01	0.00	−0.05	−0.01	0.02
useful	−0.05	0.01	0.02	0.02	0.00

```
freeexps      -0.04      -0.02      -0.01       0.02       0.01
convenit       0.00       0.05       0.02       0.00       0.01
justlike       0.03       0.02       0.00       0.03      -0.02
enjoyabl       0.00       0.02       0.03      -0.01      -0.01
research      -0.01       0.00       0.04      -0.02       0.00
meettalk       0.02      -0.03       0.01      -0.04       0.04
 useany        0.05       0.07      -0.06      -0.05       0.03
entertng       0.00      -0.04      -0.01       0.00       0.00
lessefft       0.01      -0.09       0.00       0.01       0.00
```

Modification Indices for THETA-DELTA

	learn	passtime	otherppl	useful	freeexps	convenit
	--------	--------	--------	--------	--------	--------
learn	- -					
passtime	0.02	- -				
otherppl	2.04	9.99	- -			
useful	- -	0.36	2.93	- -		
freeexps	0.05	2.12	3.23	6.75	- -	
convenit	0.53	2.82	0.53	0.02	1.40	
justlike	0.03	4.87	0.72	0.27	3.39	2.45
enjoyabl	1.16	0.33	2.07	0.03	0.73	4.25
research	0.37	0.03	0.12	0.37	6.39	0.01
meettalk	0.05	2.69	0.96	10.52	0.74	4.57
useany	0.21	2.09	2.13	3.91	0.15	6.27
entertng	0.11	0.00	0.38	1.56	0.39	15.82
lessefft	0.67	4.17	0.34	0.08	0.15	1.43

Modification Indices for THETA-DELTA

	justlike	enjoyabl	research	meettalk	useany	entertng
	--------	--------	--------	--------	--------	--------
justlike	- -					
enjoyabl	0.00	- -				
research	1.47	1.14	- -			
meettalk	1.50	1.08	0.93	- -		
useany	1.68	8.48	0.12	8.96	- -	
entertng	1.88	0.28	1.01	6.40	4.83	- -
lessefft	3.11	0.56	0.83	0.80	1.81	4.19

Modification Indices for THETA-DELTA

	lessefft
	--------
lessefft	- -

Expected Change for THETA-DELTA

	learn	passtime	otherppl	useful	freeexps	convenit
	--------	--------	--------	--------	--------	--------
learn	- -					
passtime	-0.01	- -				
otherppl	0.05	0.11	- -			
useful	- -	-0.02	0.06	- -		
freeexps	0.01	-0.05	0.09	0.08	- -	
convenit	-0.03	0.06	-0.02	-0.01	0.04	- -
justlike	0.01	0.09	-0.03	0.02	0.06	0.06
enjoyabl	-0.03	-0.02	-0.04	0.00	-0.02	0.07
research	-0.03	0.01	-0.01	0.03	-0.09	0.01
meettalk	0.01	-0.06	-0.05	-0.11	-0.01	-0.07
useany	-0.02	-0.06	-0.02	-0.08	0.04	0.12
entertng	0.01	0.00	-0.02	0.04	-0.02	-0.12
lessefft	0.03	-0.08	-0.02	0.01	0.01	-0.08

Expected Change for THETA-DELTA

	justlike	enjoyabl	research	meettalk	useany	entertng
	--------	--------	--------	--------	--------	--------
justlike	- -					
enjoyabl	0.00	- -				
research	-0.05	0.03	- -			

```
meettalk    -0.04      0.03      0.03       - -
  useany     0.05     -0.10      0.01       0.11      - -
entertng    -0.05      0.03     -0.03       0.07      0.07      - -
lessefft    -0.07      0.02      0.04       0.03     -0.06      0.06
```

          Expected Change for THETA-DELTA

              lessefft
              ----
lessefft   - -

Maximum Modification Index is 32.02 for Element (6, 4) of BETA

Hanjun Ko: A SEM of Global Interactive Advertising, 2002

Total and Indirect Effects

      Total Effects of KSI on ETA

	infomtv	convemtv	entermtv	sointmtv
	--------	--------	--------	--------
lduratn	0.29	-0.25	-0.10	0.17
	(0.16)	(0.16)	(0.09)	(0.07)
	2.26	-1.96	-1.48	2.71
hmint	0.31	0.04	0.05	-0.23
	(0.16)	(0.17)	(0.10)	(0.08)
	2.26	0.22	0.52	-2.92
hhint	-0.02	0.18	-0.11	0.37
	(0.16)	(0.16)	(0.10)	(0.08)
	-0.13	2.03	-1.11	4.62
attsite	0.12	0.11	-0.04	0.12
	(0.13)	(0.14)	(0.08)	(0.07)
	0.89	0.81	-0.54	1.76
atthp	0.06	0.06	-0.02	0.06
	(0.07)	(0.07)	(0.04)	(0.04)
	0.89	0.81	-0.54	1.74
purchsei	0.03	0.03	-0.01	0.03
	(0.04)	(0.04)	(0.02)	(0.02)
	0.89	0.81	-0.54	1.72

      Indirect Effects of KSI on ETA

	infomtv	convemtv	entermtv	sointmtv
	--------	--------	--------	--------
lduratn	- -	- -	- -	- -
hmint	0.00	0.00	0.00	0.00
	(0.02)	(0.02)	(0.01)	(0.01)
	-0.17	0.17	0.17	-0.18
hhint	0.01	-0.01	0.00	0.00
	(0.02)	(0.02)	(0.01)	(0.01)
	0.43	-0.42	-0.43	0.45
attsite	0.12	0.11	-0.04	0.12
	(0.13)	(0.14)	(0.08)	(0.07)
	0.89	0.81	-0.54	1.76
atthp	0.06	0.06	-0.02	0.06
	(0.07)	(0.07)	(0.04)	(0.04)
	0.89	0.81	-0.54	1.74
purchsei	0.03	0.03	-0.01	0.03
	(0.04)	(0.04)	(0.02)	(0.02)
	0.89	0.81	-0.54	1.72

Total Effects of ETA on ETA

	lduratn	hmint	hhint	attsite	atthp	purchsei
	--------	--------	--------	--------	--------	--------
lduratn	- -	- -	- -	- -	- -	- -
hmint	-0.01	- -	- -	- -	- -	- -
	(0.06)					
	-0.18					
hhint	0.03	- -	- -	- -	- -	- -
	(0.06)					
	0.45					
attsite	0.04	0.39	0.56	- -	- -	- -
	(0.06)	(0.07)	(0.07)			
	0.74	5.74	7.65			
atthp	0.02	0.20	0.29	0.52	- -	- -
	(0.03)	(0.04)	(0.04)	(0.06)		
	0.74	5.26	6.60	8.37		
purchsei	0.01	0.11	0.15	0.27	0.53	- -
	(0.02)	(0.02)	(0.03)	(0.04)	(0.05)	
	0.74	4.71	5.61	6.57	9.68	

Largest Eigenvalue of B*B' (Stability Index) is   0.476

Indirect Effects of ETA on ETA

	lduratn	hmint	hhint	attsite	atthp	purchsei
	--------	--------	--------	--------	--------	--------
lduratn	- -	- -	- -	- -	- -	- -
hmint	- -	- -	- -	- -	- -	- -
hhint	- -	- -	- -	- -	- -	- -
attsite	0.01	- -	- -	- -	- -	- -
	(0.05)					
	0.22					
atthp	0.02	0.20	0.29	- -	- -	- -
	(0.03)	(0.04)	(0.04)			
	0.74	5.26	6.60			
purchsei	0.01	0.11	0.15	0.27	- -	- -
	(0.02)	(0.02)	(0.03)	(0.04)		
	0.74	4.71	5.61	6.57		

Total Effects of ETA on Y

	lduratn	hmint	hhint	attsite	atthp	purchsei
	--------	--------	--------	--------	--------	--------
duration	1.00	- -	- -	- -	- -	- -
signinhp	0.02	- -	0.74	- -	- -	- -
	(0.05)					
	0.45					
phonmail	0.02	- -	0.78	- -	- -	- -
	(0.05)		(0.06)			
	0.45		13.37			
usesrch	-0.01	0.65	- -	- -	- -	- -
	(0.04)					
	-0.18					

feedback	0.02 (0.04) 0.45	- -	0.63 (0.06) 11.22	- -	- -	- -
usemulti	-0.01 (0.04) -0.18	0.70 (0.06) 10.74	- -	- -	- -	- -
staylong	-0.01 (0.04) -0.18	0.61 (0.06) 9.42	- -	- -	- -	- -
deeplink	-0.01 (0.04) -0.18	0.72 (0.07) 10.82	- -	- -	- -	- -
buildhp	0.03 (0.04) 0.74	0.26 (0.04) 5.74	0.37 (0.05) 7.65	0.65	- -	- -
again	0.04 (0.05) 0.74	0.35 (0.06) 6.10	0.50 (0.06) 8.56	0.88 (0.07) 13.33	- -	- -
spndtime	0.03 (0.04) 0.74	0.25 (0.04) 5.69	0.35 (0.05) 7.52	0.63 (0.06) 10.52	- -	- -
bestsite	0.03 (0.03) 0.74	0.23 (0.04) 5.59	0.33 (0.05) 7.29	0.58 (0.06) 9.93	- -	- -
goodbad	0.02 (0.03) 0.74	0.19 (0.04) 5.26	0.27 (0.04) 6.60	0.47 (0.06) 8.37	0.91	- -
pleasant	0.01 (0.02) 0.74	0.13 (0.03) 5.01	0.19 (0.03) 6.14	0.33 (0.04) 7.48	0.64 (0.05) 13.57	- -
favorabl	0.02 (0.03) 0.74	0.17 (0.03) 5.19	0.24 (0.04) 6.47	0.43 (0.05) 8.11	0.83 (0.05) 18.44	- -
likely	0.01 (0.01) 0.74	0.10 (0.02) 4.71	0.14 (0.03) 5.61	0.25 (0.04) 6.57	0.49 (0.05) 9.68	0.92
probable	0.01 (0.02) 0.74	0.10 (0.02) 4.76	0.15 (0.03) 5.69	0.26 (0.03) 6.71	0.51 (0.05) 10.15	0.96 (0.05) 19.30

Indirect Effects of ETA on Y

	lduratn	hmint	hhint	attsite	atthp	purchsei
duration	- -	- -	- -	- -	- -	- -
signinhp	0.02 (0.05) 0.45	- -	- -	- -	- -	- -
phonmail	0.02 (0.05) 0.45	- -	- -	- -	- -	- -
usesrch	-0.01 (0.04) -0.18	- -	- -	- -	- -	- -

feedback	0.02 (0.04) 0.45	- -	- -	- -	- -	- -
usemulti	-0.01 (0.04) -0.18	- -	- -	- -	- -	- -
staylong	-0.01 (0.04) -0.18	- -	- -	- -	- -	- -
deeplink	-0.01 (0.04) -0.18	- -	- -	- -	- -	- -
buildhp	0.03 (0.04) 0.74	0.26 (0.04) 5.74	0.37 (0.05) 7.65	- -	- -	- -
again	0.04 (0.05) 0.74	0.35 (0.06) 6.10	0.50 (0.06) 8.56	- -	- -	- -
spndtime	0.03 (0.04) 0.74	0.25 (0.04) 5.69	0.35 (0.05) 7.52	- -	- -	- -
bestsite	0.03 (0.03) 0.74	0.23 (0.04) 5.59	0.33 (0.05) 7.29	- -	- -	- -
goodbad	0.02 (0.03) 0.74	0.19 (0.04) 5.26	0.27 (0.04) 6.60	0.47 (0.06) 8.37	- -	- -
pleasant	0.01 (0.02) 0.74	0.13 (0.03) 5.01	0.19 (0.03) 6.14	0.33 (0.04) 7.48	- -	- -
favorabl	0.02 (0.03) 0.74	0.17 (0.03) 5.19	0.24 (0.04) 6.47	0.43 (0.05) 8.11	- -	- -
likely	0.01 (0.01) 0.74	0.10 (0.02) 4.71	0.14 (0.03) 5.61	0.25 (0.04) 6.57	0.49 (0.05) 9.68	- -
probable	0.01 (0.02) 0.74	0.10 (0.02) 4.76	0.15 (0.03) 5.69	0.26 (0.04) 6.71	0.51 (0.05) 10.15	- -

Total Effects of KSI on Y

	infomtv	convemtv	entermtv	sointmtv
duration	0.29 (0.16) 1.86	-0.25 (0.16) -1.56	-0.10 (0.09) -1.08	0.17 (0.07) 2.31
signinhp	-0.01 (0.12) -0.13	0.14 (0.12) 1.13	-0.08 (0.07) -1.11	0.27 (0.06) 4.62
phonmail	-0.02 (0.12) -0.13	0.14 (0.13) 1.13	-0.08 (0.08) -1.11	0.29 (0.06) 4.65
usesrch	0.20	0.02	0.03	-0.15

	(0.11)	(0.11)	(0.06)	(0.05)
	1.86	0.22	0.52	-2.92
feedback	-0.01	0.12	-0.07	0.23
	(0.10)	(0.10)	(0.06)	(0.05)
	-0.13	1.13	-1.11	4.47
usemulti	0.21	0.03	0.04	-0.16
	(0.11)	(0.12)	(0.07)	(0.06)
	1.87	0.22	0.52	-2.93
staylong	0.19	0.02	0.03	-0.14
	(0.10)	(0.10)	(0.06)	(0.05)
	1.86	0.22	0.52	-2.90
deeplink	0.22	0.03	0.04	-0.17
	(0.12)	(0.12)	(0.07)	(0.06)
	1.87	0.22	0.52	-2.93
buildhp	0.08	0.07	-0.03	0.08
	(0.09)	(0.09)	(0.05)	(0.05)
	0.89	0.81	-0.54	1.76
again	0.10	0.10	-0.04	0.11
	(0.12)	(0.12)	(0.07)	(0.06)
	0.90	0.81	-0.54	1.77
spndtime	0.07	0.07	-0.03	0.08
	(0.08)	(0.09)	(0.05)	(0.04)
	0.89	0.81	-0.54	1.76
bestsite	0.07	0.06	-0.03	0.07
	(0.08)	(0.08)	(0.05)	(0.04)
	0.89	0.81	-0.54	1.75
goodbad	0.06	0.05	-0.02	0.06
	(0.06)	(0.06)	(0.04)	(0.03)
	0.89	0.81	-0.54	1.74
pleasant	0.04	0.04	-0.01	0.04
	(0.04)	(0.05)	(0.03)	(0.02)
	0.89	0.81	-0.54	1.73
favorabl	0.05	0.05	-0.02	0.05
	(0.06)	(0.06)	(0.03)	(0.03)
	0.89	0.81	-0.54	1.74
likely	0.03	0.03	-0.01	0.03
	(0.03)	(0.03)	(0.02)	(0.02)
	0.89	0.81	-0.54	1.72
probable	0.03	0.03	-0.01	0.03
	(0.03)	(0.04)	(0.02)	(0.02)
	0.89	0.81	-0.54	1.72

Time used: 1.912 Seconds.

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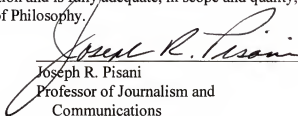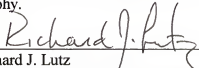
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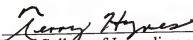
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December 2002

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